LA36

TERMINAL (DH11 & DJ11)

MD-11-DZLAD-C

EP-DZLAD-C-DL-A

OCT 1976

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digital

Made in U.S.A.

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZLAD-C-D

PRODUCT NAME: LA36 TERMINAL (DL11 & DJ11 INTERFACE)

DATE CREATED: SEPTEMBER 1975

MAINTAINER: DIAGNOSTIC GROUP

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1.0 ABSTRACT

THIS DIAGNOSTIC IS DIVIDED INTO FOUR BASIC SECTIONS:

1. A CHECK OF THE CONSOLE TERMINAL INTERFACE LOGIC
2. A CHECK OF THE PRINTING CHARACTERISTICS AND CONTROL LOGIC
3. AN ECHO PORTION DESIGNED TO CHECK THE KEYBOARD AND TO AID IN THE DIAGNOSIS OF TERMINAL PROBLEMS.
4. A CHECK OF THE VARIOUS LA36 OPTIONS.

PATTERNS USED BY THE PRINTING TESTS WERE CHOSEN FOR EASE OF VISUAL VERIFICATION. THE ECHO TESTS WERE DESIGNED FOR MAXIMUM FLEXIBILITY, WITH TEST 24 ALLOWING ANY DESIRED PATTERN TO BE USED.

2.0 REQUIREMENTS

2.1 EQUIPMENT

THE DIAGNOSTIC IS WRITTEN TO RUN ON ALL MODELS OF THE PDP-11 COMPUTER WITH EITHER DL11 OR DH11 MULTIPLEXER. UP TO 16 MULTIPLEXERS + 256 TERMINALS ARE DRIVEN. THE DIAGNOSTIC IS SET TO TEST THE TERMINALS AT [illegible] TO CHANGE ANY PARAMETERS FOR THE DH11 INTERFACE REFER TO THE DH11 PARAMETER TABLE IN THE LISTING.

2.2 STORAGE

THE DIAGNOSTIC PROGRAM USES ALL OF 4K OF MEMORY WITH EXCEPTION OF THE AREA USED BY THE ABSOLUTE LOADER.

2.3 PRELIMINARY PROGRAMS

ANY APPLICABLE PDP-11 DIAGNOSTICS SHOULD BE RUN ON THE PROCESSOR. IF ANY ERRORS ARE ENCOUNTERED DURING THE INTERFACE CHECK, REFER TO THE APPROPRIATE INTERFACE DIAGNOSTIC FOR FURTHER HELP IN LOCATING THE PROBLEM IF NEEDED.

3.0 LOADING PROCEDURE & INITIALIZATION

[illegible] THE LOAD DIAGNOSTIC PROGRAM, TAKE THE FOLLOWING NORMAL PROCEDURES. [illegible] BEFORE STARTING THE PROGRAM, REFER TO THE EXISTING LINE TABLE (DLTAB) [illegible] AND SET THE PROPER BITS IN THE TABLE TO INDICATE WHICH TERMINALS ARE TO BE TESTED. A DETAILED DESCRIPTION IS CONTAINED IN THE PROGRAM LISTING. ALSO, REFER TO THE DESCRIPTION OF THE ROUTINE "DLV". TIMER VALUES USED BY THE PROGRAM ARE A FUNCTION OF THE CPU MODEL AND MEMORY TYPE AND SHOULD BE SET UP BEFORE RUNNING THE DIAGNOSTIC. THE ROUTINE IS PRESET FOR A PDP-11/40 WITH CORE MEMORY.

IF A HARDWARE SWITCH REGISTER DOES NOT EXIST, THE PROGRAM WILL USE THE [illegible] AS THE VALUE OF THE SWITCHES. THEREFORE, THE [illegible] PROGRAM WITH THE SWITCH VALUE BEFORE STARTING THE PROGRAM WHEN NOT USING HARDWARE SWITCHES.

4.0 STARTING PROCEDURE

4.1 STARTING ADDRESSES

[illegible] = EXECUTE WITH DH11 MULTIPLEXER
[illegible] = EXECUTE WITH DZ11 MULTIPLEXER

4.1.1 EXECUTE WITH DH11 MULTIPLEXER

A. REFER TO SECTION 3.0 AND MAKE SURE THE PROPER BITS IN THE [illegible] TABLE INDICATING WHAT TERMINALS ARE TO BE TESTED HAVE BEEN CLEARED AND THE CORRECT DELAY COUNT FOR THE CPU AND MEMORY TYPE IN USE HAS BEEN SET IN TIMER.

B. SET SWITCH REGISTER = 200.8. AND PRESS THE LOAD ADDRESS SWITCH.

C. SET THE SWITCH REGISTER BITS 7-0 EQUAL TO THE PAPER WIDTH IN TERMS OF THE NUMBER OF COLUMNS TO BE USED. REFER TO SECTION 5.1.4

D. SET SWITCH 8 UP IF IT IS DESIRED TO SELECT A SPECIFIC TEST NUMBER THAN BEGIN THE NORMAL PRINTING TEST SEQUENCE. OTHERWISE, LEAVE SWITCH 8 DOWN.

E. PRESS THE START SWITCH. IF BIT 9 WERE ZERO WHEN STARTING THE NUMBER OF DH11'S UNDER TEST WILL BE PRINTED ON ALL EXISTING TERMINALS AND THE PRINTER TESTS ARE EXECUTED SEQUENTIALLY.

F. IF BIT 9 WERE 1 WHEN STARTING, THE NUMBER OF DH11'S UNDER TEST WILL BE INDICATED AND THE MESSAGE "SELECT TEST NUMBER" WILL BE PRINTED ON ALL EXISTING TERMINALS. THE PROGRAM WILL THEN BE WAITING FOR A TEST SELECTION VIA ANY TERMINAL IF SWITCH 10 IS DOWN. REFER TO SECTION 5.2

7.1.2 EXECUTE WITH DZ11 MULTIPLEXER

A. SAME INSTRUCTIONS AS 7.1.1 EXCEPT THAT THE STARTING ADDRESS IN SR IS 204 AND THE FIRST MESSAGE PRINTED WILL BE THE NUMBER OF DZ11'S UNDER TEST.

8.0 OPERATING PROCEDURE

THE PROGRAM IS GENERALLY CONTROLLED FROM A MULTIPLEXER TERMINAL, BUT A FEW SWITCH REGISTER CONTROLS ARE AVAILABLE. THE PRINTER TEST WILL RESPOND TO ALL TERMINALS OR TO THE ONE UNDER TEST AS A FUNCTION OF SR BIT 13. ECHO TESTS WILL REFERENCE ONLY THE TERMINAL SELECTING THE TEST OR ALL TERMINALS DEPENDING ON THE SPECIFIC TEST AND THE SETTING OF SWITCH 13.

8.1 SWITCH REGISTER CONTROL

THE VARIOUS SWITCHES AND THEIR FUNCTIONS ARE LISTED BELOW. SWITCHES MAY BE CHANGED AND SET AS DESIRED EXCEPT AS NOTED IN THE SPECIFIC SWITCH DESCRIPTIONS. REFER TO THE DETAILED SWITCH DESCRIPTIONS FOR FURTHER, MORE COMPLETE INFORMATION.

SWITCH NUMBER	DESCRIPTION
15	(UP) = HALT AT END OF TEST (DOWN) = CONTINUE TEST SEQUENCE
13	(UP) = DRIVE ONLY SELECTED TERMINAL (DOWN) = DRIVE ALL TERMINALS
8	(UP) = SELECT TEST (AT START-UP ONLY) (DOWN) = START NORMAL TEST SEQUENCE
7-0	NUMBER OF COLUMNS AT START-UP

5.1.1 SWITCH 15

WITH SWITCH 15 IN THE UP POSITION, THE PROGRAM WILL HALT AT THE END OF THE CURRENT TEST. REPLACING SWITCH 15 TO THE DOWN POSITION AND PRESSING CONTINUE WILL CONTINUE THE NORMAL TEST OPERATION.

5.1.2 SWITCH 13

PLACING SWITCH 13 IN THE DOWN POSITION WILL CAUSE THE DRIVING OF ALL TERMINALS. IF SWITCH 13 IS UP, ONLY THE TERMINAL UNDER TEST IS DRIVEN.

NOTE

SWITCH 13 CAN ONLY BE CHANGED WHEN THE PROGRAM IS WAITING FOR A TEST SELECTION.

5.1.3 SWITCH 8 (AT START-UP ONLY)

TO SELECT A SPECIFIC TEST RATHER THAN START THE PRINTING TEST SEQUENCE, PLACE SWITCH 8 UP BEFORE STARTING THE DIAGNOSTIC. OTHERWISE, LEAVE SWITCH 8 DOWN TO RUN THE NORMAL TEST SEQUENCE. THIS SWITCH IS ONLY EFFECTIVE AT START-UP OF THE PROGRAM.

5.1.4 SWITCHES 7 TO 0 (AT START-UP ONLY)

AT START-UP ONLY, SWITCHES 7 TO 0 ARE USED TO SET THE DESIRED MAXIMUM NUMBER OF COLUMNS THE DIAGNOSTIC IS TO TEST. IF THE NUMBER SET IS GREATER THAN 132(204) OR LESS THAN [illegible], THE PROGRAM WILL DEFAULT TO 132(204). THE VALUE SET MUST BE IN OCTAL FORM.

5.2 KEYBOARD CONTROL

THE PROGRAM WILL ALWAYS BE UNDER KEYBOARD CONTROL. CONTROL FROM THE SWITCH REGISTER DURING PROGRAM EXECUTION IS ONLY POSSIBLE WITH SWITCHS 13 AND 15 AS STATED ABOVE.

TYPING THE "RUBOUT" (DEL) KEY ON ANY TERMINAL KEYBOARD WILL TERMINATE THE TEST IMMEDIATELY. AFTER TERMINATION OF THE TEST THE FOLLOWING MESSAGE WILL BE TYPED:

SELECT TEST #

AT THIS TIME, TYPE THE DESIRED TEST NUMBER FOLLOWED BY ANY ONE OF THE FOLLOWING CONTROL CHARACTERS:

. (PERIOD) = RUN THE SELECTED TEST ONCE AND RETURN FOR ANOTHER TEST SELECTION.

L = LOOP ON THE SELECTED TEST UNTIL A "RUBOUT" IS TYPED.

S = START THE TEST SEQUENCE WITH THE SELECTED TEST. CONTINUE TO LOOP ON THE PRINTING TEST SEQUENCE UNTIL A "RUBOUT" IS TYPED.

THE L OR S MAY BE EITHER UPPER OF LOWER CASE, BUT THE TEST NUMBER MUST ALWAYS BE A 3 DIGIT OCTAL NUMBER. FOR ALL ECHO TESTS, THE "L" AND "S" WILL ONLY RUN THE TEST ONCE (THE SAME AS IF TYPING A PERIOD). FOR ALL OPERATION TESTS, THE "S" WILL ONLY RUN THE TEST ONCE (THE SAME AS IF TYPING A PERIOD), HOWEVER, TYPING AN "L" WILL CAUSE THE PROGRAM TO LOOP ON THE SELECTED TEST. IF AN ERROR IS DETECTED IN THE TEST SELECTION (ILLEGAL TEST NUMBER OR CONTROL CHARACTER) A QUESTION MARK IS TYPED AND THE MESSAGE WILL BE REPEATED.

6.0 TEST DESCRIPTIONS

6.1 PRINTING TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE PRINTING MECHANISM AND THE ASSOCIATED CONTROL LOGIC. AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED AND, IF THE TEST IS A FUNCTION OF THE NUMBER OF COLUMNS, THE NUMBER OF COLUMNS BEING TESTED WILL BE INDICATED. A DETAILED DESCRIPTION AND SAMPLE PATTERNS FOR EACH PRINTING TEST FOLLOWS:

6.1.1 TEST 0 - DATA PATH TEST

THIS TEST IS USED TO TEST THE DATA LINES TO AND THROUGH THE INTERFACE AND TO THE TERMINAL. AN ALTERNATING BIT PATTERN IS SENT WHICH WILL PRINT ALTERNATING *'S AND U'S IN A CHECKERBOARD PATTERN TO THE MAXIMUM COLUMN WIDTH. THE STARTING CHARACTER FOR EACH LINE IS ALTERNATED AND A TOTAL OF FOUR LINES ARE PRINTED.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

```
*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
*U*U*U*U*U*U*U*U*U*U*U*U*U*U*U
U*U*U*U*U*U*U*U*U*U*U*U*U*U*U*
```

6.1.2 TEST 1 - PRINTABLE CHARACTER TEST

THIS TEST PRODUCES A CHECK OF ALL 94(10) PRINTABLE CHARACTERS. THE CHARACTERS ARE PRINTED IN GROUPS OF THREE WITH THREE GROUPS PER LINE, SEPARATED BY THREE SPACES BETWEEN GROUPS. THE FIRST COLUMN WILL CONTAIN ALL ASCII CODES FROM 040 TO 077. COLUMN TWO WILL CONTAIN ALL ASCII CODES FROM 100 TO 137 - PRIMARILY THE CAPITAL LETTER SET. THE LAST COLUMN WILL CONTAIN ALL ASCII CODES FROM 140 TO 176 - PRIMARILY THE SMALL LETTER SET.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

```
       @@@  ```
!!!    AAA  AAA
"""    BBB  BBB
###    CCC  CCC
$$$    DDD  DDD
%%%    EEE  EEE
&&&    FFF  FFF
'''    GGG  GGG
(((    HHH  HHH
)))    III  III
***    JJJ  JJJ
+++    KKK  KKK
,,,    LLL  LLL
---    MMM  MMM
...    NNN  NNN
///    OOO  OOO
000    PPP  PPP
111    QQQ  QQQ
222    RRR  RRR
333    SSS  SSS
444    TTT  TTT
555    UUU  UUU
666    VVV  VVV
777    WWW  WWW
888    XXX  XXX
999    YYY  YYY
:::    ZZZ  ZZZ
;;;    [[[
<<<    \\\
===    ]]]
>>>
???
```

5.1.3 TEST 2 - NON-PRINTABLE CHARACTER TEST

THIS TEST CHECKS ALL NON-PRINTABLE CHARACTERS THAT HAVE NO CONTROL FUNCTION IN THE LA36 TERMINAL OR THE LA36 OPTIONS (SUCH AS CR, LF, BS, & BEL). FIRST THE ASCII CODE WILL BE PRINTED FOLLOWED BY THE MNEMONIC AFTER A FEW SEPARATING SPACES. FOLLOWING THE MNEMONIC, THE ACTUAL CONTROL CHARACTER WILL BE SENT THREE TIMES AND NOTHING SHOULD HAPPEN AT THE PRINTER. THIS PATTERN IS REPEATED, THREE TIMES ON A LINE, UNTIL ALL OF THE NON-PRINTING CHARACTERS HAVE BEEN TESTED.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

```
000   NUL   001   SOH   002   STX
005   ACK   020   DLE   021   DC1
022   DC2   023   DC3   024   DC4
025   NAK   026   SYN   027   ETB
030   CAN   031   EM    032   SUB
034   FS    035   GS    036   RS
037   US    177   DEL
```

6.1.4 TEST 3 - CARRIAGE RETURN TEST

THIS TEST CHECKS THE CARRIAGE RETURN FROM ALL EVEN NUMBERED COLUMNS AND THE SPACING OF THE SOLENOID HEAD FROM THE LEFT MARGIN. IT IS ALSO A GOOD CHECK FOR PROPER OPERATION OF THE POSITION DECODER.

THE TEST PRINTS A FULL LINE OF ALTERNATING O'S AND SPACES, STARTING WITH A O. AT THE END OF THE LINE THE PRINT HEAD IS RETURNED TO THE LEFT MARGIN WITH A CARRIAGE RETURN. THE SPACES ARE THEN FILLED IN BY SPACING THE PRINT HEAD OUT FROM THE LEFT MARGIN TO THE FIRST SPACE, PRINTING AN "X", AND EXECUTING A CARRIAGE RETURN. THIS PATTERN IS REPEATED UNTIL THE LINE IS COMPLETED. CHECK TO SEE THAT ALL X'S ARE IN THE MIDDLE OF THE SPACE BETWEEN THE TWO ZEROES ON EITHER SIDE OF IT.

EXAMPLE:

```
          OXOXOXOXOXOXOXOXOXOXOXOXOXOXOX
```

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THIS TEST WILL PRINT A LINE OF O'S AND SPACES, THEN PRINT A DIAGINAL LINE OF X'S. TO CORRECTLY CHECK THE ENCODER, THE AUTO LINE FEED OPTION SHOULD BE DISABLED.

EXAMPLE:

```
          O O O O O O O O O
           X
             X
               X
                 X
                   X
                     X
                       X
                         X
```

6.1.5 TEST 4 - MULTIPLE LINE FEED TEST

THIS TEST CHECKS THE LINE FEED CAPABILITY OF THE PRINTER BY SENDING VARIOUS GROUPS OF LINE FEEDS INTERSPACED WITH REFERENCE LINES. THE NUMBER PRINTED AS THE REFERENCE LINE INDICATES THE NUMBER OF LINE FEEDS THAT FOLLOW. THE FIRST AND LAST LINES ALSO CONTAIN A STRING OF DASHES AS REFERENCE POINTS FOR MEASURING. THE TOTAL DISTANCE IS 63(10) LINES BETWEEN THE TWO DASHED LINES.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY CARRIAGE RETURN, THE NUMBER PRINTED WILL INDICATE ONE LESS THAN THE NUMBER OF LINE FEEDS (THE NUMBER OF BLANK LINES) THAT FOLLOW. THE TOTAL DISTANCE BETWEEN THE TWO DASHED LINES WILL THEN BE 69 LINES.

EXAMPLE:

```
      01--------------------------------------------------
      02

      04



      08







      16
         \
          15 BLANK LINES
         /
      32
         \
          31 BLANK LINES
         /
      00--------------------------------------------------
```

5.1.5 TEST 5 - SINGLE LINE FEED TEST

THIS TEST IS DESIGNED TO CHECK THE TIMING OF SINGLE LINE FEEDS AND THE CAPABILITY OF DOING LINE FEEDS IN ALL COLUMNS. TWO REFERENCE LINES ARE USED BY THIS TEST (AND TEST 6) WHICH ALSO CAN BE USED TO EASILY CHECK THE NUMBER OF COLUMNS THE PRINTER IS PRINTING.

THE FIRST REFERENCE LINE CONTAINS 130(10) ZEROES FOLLOWED BY TWO 2'S IF TESTING 132(10) COLUMNS. IF LESS THAN 132 COLUMNS, THE LINE WILL CONTAIN 0'S FOR TWO LESS THAN THE MAXIMUM NUMBER OF COLUMNS FOLLOWED BY THE TWO 2'S. THIS REFERENCE LINE IS A QUICK CHECK FOR 132(10) COLUMNS IF TESTING THE FULL 132(10) COLUMNS. THE SECOND REFERENCE LINE PRINTS A STRING OF NUMBERS (1 TO 9 & 0) REPEATED TO THE MAXIMUM COLUMN. THIS LINE, AGAIN, CAN BE USED AS A QUICK CHECK OF THE NUMBER OF COLUMNS.

THE LINE FEED TEST IS ACCOMPLISHED BY: PRINTING THE FIRST REFERENCE LINE OF 0'S AND TWO 2'S; THEN EITHER SENDING 60(10) 3'S, IF TESTING 132(10) COLUMNS, OR WAITING 1.8 SECONDS FOR AN LCV, IF TESTING LESS THAN 132(10) COLUMNS. IF TESTING 132(10) COLUMNS, NOTHING SHOULD HAPPEN, EXCEPT FOR AN LCV, AT THE END OF THE LINE. THE 3'S SHOULD BE LOST AND NEVER PRINTED. AFTER THE LCV, WITH THE PRINT HEAD AT THE EXTREME RIGHT, A CARRIAGE RETURN - LINE FEED WILL BE SENT FOLLOWED BY REPEATED BACKSLASHES "\" AND LINEFEEDS TO PRINT A DIAGONAL LINE DOWN THE PAPER. WHEN A BACKSLASH IS PRINTED IN THE MAXIMUM COLUMN, A CARRIAGE RETURN WILL BE SENT IMMEDIATELY AFTER THE LINE FEED AND THE SECOND REFERENCE LINE OF SEQUENTIAL NUMBERS WILL BE PRINTED. AFTER COMPLETING THE LINE, A CARRIAGE RETURN - LINE FEED WILL BE SENT AND THE PROGRAM WILL WAIT ONE SECOND FOR THE CARRIAGE RETURN FUNCTION TO COMPLETE. AFTER THE DELAY, THE REFERENCE LINE WILL BE REPEATED, THE LAST LINE BEING GUARANTEED TO BE CORRECT. ANY TIMING PROBLEMS DURING THE LINE FEEDS WILL SHOW AS MISS PRINTS OR MISSING CHARACTERS DURING THE FIRST 15(10) CHARACTERS OF THE MIDDLE REFERENCE LINE. ALSO, ANY PAPER FEED PROBLEMS WILL CAUSE MISS-ALIGNMENT OF THE SLASHES FORMING THE DIAGONAL LINE.

EXAMPLE:

```
00000000000000000000000000000022
```

```
12345678901234567890123456789O
12345678901234567890123456789O
```

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE EVERY PLACE A CARRIAGE RETURN IS EXECUTED.

EXAMPLE:

```
          0000000022

          \
           \
            \
             \
              \
               \
                \
                 \
                  \
                   \

          1234567890

          1234567890
```

8.1.7 TEST 6 - BACKSPACE TEST

THIS TEST IS DESIGNED TO TEST THE PRINT TIMING AS IN TEST 5 AS WELL AS THE BACKWARD AND FORWARD MOVEMENT OF THE PRINT SOLENOID HEAD.

THE TEST CONSISTS OF THE SAME FIRST REFERENCE LINE AS IN TEST 5, THEN A CARRIAGE RETURN-LINE FEED. A FULL LINE IS THEN PRINTED USING THE FOLLOWING PATTERN:

```
          FORWARD SLASH    "/"
          BACKSPACE
          BACK SLASH       "\"
```

THIS PATTERN PRODUCES A LINE OF ALL X'S. THE TWO SLASHES SHOULD CROSS EXACTLY AT THE MIDDLE, PRODUCING THE X CHARACTER. WHEN THE LINE IS COMPLETED A CARRIAGE RETURN-LINE FEED IS SENT AND THE LAST TWO REFERENCE LINES ARE PRINTED AS IN TEST 5. ANY TIMING PROBLEMS WILL [illegible] THE FIRST [illegible] CHARACTERS OF THE MIDDLE REFERENCE LINE, AGAIN AS IN TEST 5.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EACH RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

```
          000000000000000000000000000022
          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
          123456789012345678901234567890
          123456789012345678901234567890
```

6.1.8 TEST 7 - OVERPRINT TEST

THIS TEST IS DESIGNED TO CHECK THE SPACING AND REPEATABLE PRINTING CHARACTERISTICS OF THE PRINTER. THREE ROWS OF CHARACTERS ARE EACH OVERPRINTED FOUR TIMES. THE ROWS CONSIST OF THE FOLLOWING CHARACTERS ALTERNATED ACROSS THE LINE:

```
        ROW 1        W-SP
        ROW 2        SP-E
        ROW 3        3-SP
```

THE RESULTING PATTERN WILL BE A CHECKERBOARD PATTERN AND THE OVERPRINTED CHARACTERS SHOULD BE ALIGNED PROPERLY WITH THE INITIAL CHARACTERS.

EXAMPLE:

```
        W W W W W W W W W W W W W W W
         E E E E E E E E E E E E E E
        3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
```

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THE LINES WILL NOT BE OVERPRINTED. THERE WILL BE THREE LINES OF EACH CHARACTER WITH A BLANK LINE BETWEEN EACH GROUP OF CHARACTERS. THE CHARACTERS IN EACH GROUP SHOULD BE IN THE SAME COLUMNS.

EXAMPLE:

```
        W W W W W W W W W W
        W W W W W W W W W W
        W W W W W W W W W W

         E E E E E E E E E
         E E E E E E E E E
         E E E E E E E E E

        3 3 3 3 3 3 3 3 3 3
        3 3 3 3 3 3 3 3 3 3
        3 3 3 3 3 3 3 3 3 3
```

6.1.9 TEST 10 - PRINTING FREQUENCY SWEEP TEST

THIS TEST PRINTS THE CHARACTER "H" REPEATEDLY, 30(10) CHARACTERS PER LINE FOR FOUR LINES. DURING THE FIRST TWO LINES, THE TIME INTERVAL BETWEEN CHARACTERS IS INCREASED FROM 30(10) MILLISECONDS TO 1.8 SECONDS USING THE FOLLOWING FORMULA TO CREATE A LOGRITHMIC INCREASE:

NEW DELAY = OLD DELAY + OLD DELAY 16 + OLD DELAY 128

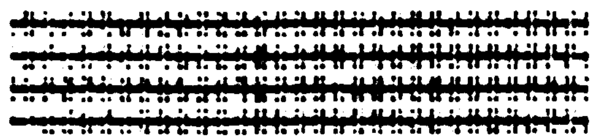
THE LAST TWO LINES DO JUST THE REVERSE. THE TIME INTERVAL BETWEEN CHARACTERS IS DECREASED FROM 1.8 SECONDS TO 30(10) MILLISECONDS USING THE FOLLOWING FORMULA TO AGAIN CREATE A LOGRITHMIC DECREASE:

NEW DELAY = OLD DELAY - OLD DELAY 16 - OLD DELAY 128

LOOK FOR POSSIBLE MISS-ALIGNMENT OF THE CHARACTERS OR SPACES BETWEEN CHARACTERS AS AN INDICATION OF TIMING PROBLEMS.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:



6.1.10 TEST 11 - RIBBON FEED TEST

THIS TEST CHECKS THE RIBBON FEED MECHANISM BY PRINTING A SINGLE COLUMN OF [illegible] LINES OF X'S FROM THE LEFT HAND MARGIN OF THE PAGE. VISUALLY CHECK FOR PROPER OPERATION OF THE RIBBON FEED MECHANISM DURING THIS TEST.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

6.1.11 TEST 12 - PRINTER BELL TEST

THIS TEST CHECKS THE PRINTER BELL BUFFER TO INSURE THAT EIGHT BELLS ARE DISTINCTLY HEARD, EVEN WHEN SENT AT THE MAXIMUM TRANSFER RATE. THE PROGRAM SENDS 8 BELL CODES AT THE MAXIMUM RATE TO THE PRINTER THEN WAITS 2.5 SECONDS TO ALLOW THE OPERATOR TO HEAR THE BELLS.

6.1.12 TEST 17 - LIFE TEST

THIS TEST RUNS CONTINUOUSLY AND IS RUN AS AN INDIVIDUAL, SPECIAL TEST. IT IS NOT PART OF THE STANDARD PRINTING TEST SEQUENCE.

THIS TEST PRINTS 2 LINES OF EACH PRINTABLE CHARACTER AND THEN REPEATS CONTINUOUSLY. THE SECOND LINE OF EACH CHARACTER IS OVERPRINTED 4 TIMES TO CONSERVE PAPER. AT THE END OF EACH COMPLETE PASS THROUGH THE CHARACTER SET A MESSAGE IS PRINTED INDICATING THE NUMBER OF PASSES EXECUTED. IF ANY CHARACTER (EXCEPT "RUBOUT") IS TYPED ON THE KEYBOARD DURING THIS TEST, THE PATTERN WILL CHANGE AND RESTART WITH THE TYPED CHARACTER. THIS WILL ONLY HAPPEN IF KEYBOARD CONTROL IS IN USE.

EXAMPLE:

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
BBBBBBBBBBBBBBBBBBBBBBBBBBBBBB
```

IF THE AUTO LINE FEED OPTION IS SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THE TEST WILL PRINT SIX LINES OF EACH CHARACTER WITH A BLANK LINE BETWEEN THE FIRST AND SECOND LINES AS WELL AS BETWEEN EACH GROUP OF CHARACTERS.

EXAMPLE:

```
AAAAAAAAAAAAAAA

AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA
AAAAAAAAAAAAAAA

BBBBBBBBBBBBBBB

BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
BBBBBBBBBBBBBBB
```

6.2 ECHO TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE KEYBOARD AND AN AID IN ISOLATING TROUBLES WITHIN THE TERMINAL. AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED. TYPING A "RUBOUT" OR "DELETE" AT ANY TIME, WHETHER IN KEYBOARD CONTROL OR NOT, WILL EXIT THE CURRENT ECHO TEST AND PRINT A TEST TERMINATION MESSAGE. IF IN KEYBOARD CONTROL, THE SELECT TEST MESSAGE WILL BE PRINTED AND THE PROGRAM WILL AWAIT A TEST SELECTION AS USUAL. IN SWITCH REGISTER CONTROL, THE PROGRAM WILL HALT (AT 60L) WAITING FOR CONTROL VIA THE SWITCH REGISTER. A DETAILED DESCRIPTION OF EACH TEST FOLLOWS:

6.2.1 TEST 20 - CHARACTER ECHO TEST

THIS TEST IS DESIGNED TO OPERATE THE TERMINAL IN A SIMULATED LOCAL MODE. ANY CHARACTER TYPED ON THE KEYBOARD (EXCEPT A "RUBOUT") WILL BE ECHOED TO THE PRINTER.

6.2.2 TEST 21 - LINE ECHO TEST, FAST RATE

THIS TEST CONTINUALLY SENDS FULL LINES OF ANY CHARACTER UP TO THE MAXIMUM COLUMN WIDTH. THE TEST PRINTS A "D" CHARACTER WHEN STARTED UNTIL A KEY IS TYPED ON THE KEYBOARD. THE PROGRAM WILL THEN SEND THE TYPED CHARACTER UNTIL ANOTHER CHARACTER IS TYPED OR THE TEST IS TERMINATED BY TYPING A "RUBOUT". THE CHARACTERS ARE TRANSMITTED AT THE MAXIMUM RATE WITH A CARRIAGE RETURN-LINE FEED INSERTED AFTER EVERY 132(10) PRINTABLE CHARACTERS.

IF THE LA36 IS IN HALF DUPLEX WHEN RUNNING THIS TEST, CHARACTERS MAY BE LOST OR GARBLED WHENEVER A CHARACTER IS TYPED ON THE KEYBOARD.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

6.2.3 TEST 22 - LINE ECHO TEST, SLOW RATE

THIS TEST IS IDENTICAL TO TEST 21 EXCEPT A DELAY OF 1.5 SECONDS IS INSERTED BETWEEN EACH CHARACTER TO ALLOW THE PRINT HEAD TO PERFORM AN [illegible] BETWEEN CHARACTERS.

6.2.4 TEST 23 - CHARACTER CODE ECHO TEST

THIS TEST WILL PRINT THE OCTAL CODE RECEIVED BY THE PROCESSOR FOLLOWED BY THE CHARACTER OR THE MNEMONIC OF THE CHARACTER EVERY TIME A KEY IS PRESSED ON THE KEYBOARD. THE PARITY OF THE RECEIVED CODE WILL BE INDICATED AS EITHER ODD OR EVEN. ALLOW SUFFICIENT TIME BETWEEN CHARACTERS FOR THE LINE TO BE PRINTED.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BETWEEN EACH PRINTED LINE.

EXAMPLE:

```
301   A     ODD
[illegible]
[illegible]
215   CR    EVEN
240   SP    EVEN
```

6.2.5 TEST 24 - SELECTED PATTERN ECHO TEST

THIS TEST IS DESIGNED TO GIVE MAINTENANCE THE FLEXIBILITY TO CHOOSE THEIR OWN PATTERNS FOR ISOLATING ANY SPECIFIC PROBLEMS WHICH MAY ARISE IN THE FIELD.

TYPE ANY CHARACTERS (EXCEPT CONTROL-C AND RUBOUT) AND EACH CHARACTER WILL BE ECHOED AS TYPED. A MAXIMUM OF 256(10) CHARACTERS MAY BE INPUTTED. NO CARRIAGE RETURNS OR LINE FEEDS ARE INSERTED BY THE PROGRAM. ALL CHARACTERS MUST BE INPUTTED BY THE OPERATOR. TO TERMINATE THE INPUT STRING TYPE A CONTROL-C. THE PROGRAM WILL THEN CONTINUALLY ECHO THE INPUTTED PATTERN. TO STOP THE PRINTING, TYPE CONTROL-C. THE PROGRAM WILL STOP PRINTING THE PATTERN AND WILL WAIT FOR EITHER ANOTHER PATTERN INPUT TERMINATED BY A CONTROL-C, OR THE SAME PATTERN MAY BE USED AGAIN BY TYPING CONTROL-C. TO EXIT THE TEST AT ANY TIME, TYPE A "RUBOUT".

WHEN ANY OPTIONS ARE AVAILABLE, BE CAREFUL WHAT CHARACTERS OR CHARACTER SEQUENCES ARE SELECTED.

6.2.6 TEST 25 - BELL ECHO TEST

THIS TEST IS DESIGNED TO TEST THE BELL ON COLUMN 64 IF TYPING HAS OCCURED ON THE LINE. THE TEST PRINTS A MESSAGE:

    TYPE ANY PRINTABLE CHARACTER AND LISTEN FOR BELL ....

AFTER THE TEST MESSAGE IS PRINTED, TYPE ANY PRINTABLE CHARACTER ON THE KEYBOARD. THE CHARACTER WILL BE ECHOED AND THE BELL SHOULD RING. THE MESSAGE WILL THEN BE TYPED AGAIN. TYPE THE "RUBOUT" KEY TO TERMINATE THE TEST AT ANY TIME.

6.3 OPTION TESTS

THESE TESTS ARE DESIGNED AS A TEST OF THE VARIOUS OPTIONS IN WHATEVER COMBINATIONS THEY ARE AVAILABLE IN THE LA36. AT THE BEGINNING OF EACH TEST, THE TEST NUMBER WILL BE PRINTED INDICATING WHICH TEST IS BEING EXECUTED. TYPING A "RUBOUT" OR "DELETE" AT ANY TIME, WHETHER IN KEYBOARD CONTROL OR NOT, WILL EXIT THE CURRENT OPTION TEST. A DETAILED DESCRIPTION OF EACH TEST FOLLOWS:

6.3.1 TEST 30 - SECONDARY CHARACTER SET OPTION

THIS TEST IS DESIGNED TO TEST THE SECONDARY CHARACTER SET OPTION, TESTING THE ABILITY TO SELECT EITHER CHARACTER SET UNDER SOFTWARE CONTROL FROM THE CPU AND PRINTING THE CORRECT CHARACTERS WITHIN EACH CHARACTER SET.

A NUMBER IS PRINTED AT THE LEFT MARGIN INDICATING WHICH CHARACTER SET IS BEING PRINTED, #1 INDICATES THE PRIMARY SET AND #2 INDICATES THE SECONDARY SET (APL). AFTER THE NUMBER, THE APPROPRIATE SHIFT IN (SI) OR SHIFT OUT (SO) WILL BE SENT FOLLOWED BY THE ENTIRE PRINTABLE CHARACTER SET. IF LESS THAN 98 COLUMNS ARE BEING TESTED, A CARRIAGE RETURN - LINE FEED WILL BE INSERTED IN THE APPROPRIATE PLACES. THIS WILL BE REPEATED, ALTERNATING BETWEEN PRIMARY AND SECONDARY SETS UNTIL 16 LINES HAVE BEEN PRINTED (IF USING 98 OR MORE COLUMNS). THERE WILL BE A BLANK LINE BETWEEN EACH PAIR OF LINES TO SEPARATE EACH GROUPING. CHANGE LOCATION "T30SC" AT THE END OF TEST30 TO 377 (8) IF USING 8 BIT SELECTION CODE RATHER THAN THE SI AND SO TO SELECT CHARACTER SETS. THE TEST WILL THEN SET OR CLEAR BIT 8 INSTEAD OF SENDING THE SI OR SO TO SELECT CHARACTER SETS.

WITH THE AUTO LINE FEED OPTION SET TO PRODUCE AN AUTOMATIC LINE FEED AFTER EACH RECEIVED CARRIAGE RETURN. THERE WILL BE EXTRA BLANK LINES EVERY PLACE A CARRIAGE RETURN IS SENT.

EXAMPLE:

```
#1= !"#$%&'( ........PRIMARY CHARACTER SET.........
#2= !"#$%&'( ........SECONDARY CHARACTER SET.........

#1= !"#$%&'( ........PRIMARY CHARACTER SET.........
#2= !"#$%&'( ........SECONDARY CHARACTER SET.........
```

5.3.3 TEST 31 - SELECTIVE ADDRESSING OPTION

THIS TEST IS DESIGNED TO TEST THE VARIOUS FUNCTIONS OF THE SELECTIVE ADDRESSING OPTION. THE TEST FIRST SENDS AN "EOT" ‹004› TO DISABLE ALL TERMINALS AND TRIES TO PRINT AN ERROR MESSAGE. THE ERROR MESSAGE SHOULD NOT BE PRINTED ON ANY TERMINAL WITH THE SELECTIVE ADDRESSING OPTION. THEN A "BEL" ‹007› AND "STX" ‹002› ARE SENT TO SELECT ALL TERMINALS. AT THIS POINT THE TEST NUMBER IS PRINTED ON ALL TERMINALS. THUS, IF AN ERROR MESSAGE IS PRINTED BEFORE THE TEST NUMBER, THE EOT DID NOT DE-SELECT THE TERMINAL WHERE THE MESSAGE WAS PRINTED.

THE TEST NEXT SENDS AN EOT DIRECTLY FOLLOWED BY A STX, WITH NO SELECT CHARACTER. AGAIN, THE ERROR MESSAGE IS SENT TO ALL TERMINALS, WHICH SHOULD NOW BE ALL DE-SELECTED. THE ERROR MESSAGE SHOULD NOT BE PRINTED ON ANY TERMINAL WITH THE SELECTIVE ADDRESSING OPTION

THE NEXT SERIES OF CHECKS ARE MADE ON THE GROUP SELECT CHARACTER. A TABLE LOCATED AT THE END OF TEST 31 IN THE LISTING IS USED TO TEST VARIOUS GROUP SELECT CHARACTERS. THE FIRST ZERO ENCOUNTERED IN THE TABLE WILL INDICATE THE END OF THE TABLE AND THE TEST WILL GO TO THE NEXT SERIES OF CHECKS ON THE OPTION. THE TABLE IS PRESET WITH A SINGLE GROUP SELECT CHARACTER, THE LETTER "G", BUT ALLOWS ROOM TO TEST UP TO 8 DIFFERENT SELECT CODES. THIS TABLE SHOULD BE CHANGED TO CONTAIN THE VARIOUS GROUP SELECT CHARACTERS DESIRED TO TEST WITH ONE ASCII CODE PER LOCATION. THE TEST WILL THEN USE THE VARIOUS GROUP SELECT CHARACTERS TO SELECT TERMINALS AND PRINT A MESSAGE ON EACH SELECTED TERMINAL INDICATING THE GROUP SELECT CHARACTER USED. CHECK THAT THE CORRECT GROUP SELECT CHARACTER HAS ENABLED EACH TERMINAL. ALSO, IT MAY BE HELPFUL TO PLACE ;UNUSED SELECT CHARACTERS IN THE TABLE TO CHECK THAT THEY DO NOT SELECT TERMINALS. IF AN ERROR MESSAGE HAS PRINTED BETWEEN THE TEST NUMBER AND THE GROUP SELECT MESSAGE, THE TERMINAL WHERE THE MESSAGE WAS PRINTED WAS SELECTED BY AN EOT AND STX WITH NO SELECT CHARACTER BETWEEN THEM.

THE LAST SERIES OF CHECKS ARE MADE ON THE UNIQUE SELECT CHARACTER. A TABLE LOCATED AT THE END OF TEST 31 IN THE LISING IS USED TO TEST VARIOUS UNIQUE SELECT CHARACTERS. THE FIRST ZERO ENCOUNTERED IN THE TABLE WILL INDICATE THE END OF THE TABLE. THE PROGRAM WILL SELECT ALL TERMINALS USING THE BEL CODE BEFORE EXITING THE TEST. THE TABLE IS PRESET WITH A SINGLE UNIQUE SELECT CHARACTER, THE LETTER "U", BUT ALLOWS ROOM TO TEST UP TO 16 DIFFERENT UNIQUE SELECT CODES. THIS TABLE SHOULD BE CHANGED TO CONTAIN THE VARIOUS UNIQUE SELECT CHARACTERS DESIRED TO TEST, WITH ONE ASCII CODE PER LOCATION. MAKE SURE THAT EACH CHARACTER IN THE TABLE IS A VALID UNIQUE SELECT CODE OR THE DIAGNOSTIC WILL HANG DURING THIS PORTION OF THE TEST. USING EACH UNIQUE SELECT CHARACTER IN TURN, THE TEST WILL PERFORM THE REMAINING CHECKS OF THE SELECTIVE ADDRESSING OPTION.

THE TEST WILL SEND AN EOT FOLLOWED BY THE CURRENT UNIQUE SELECT CHARACTER. BEFORE THE STX IS SENT, THE TEST WILL TRY TO PRINT THE ERROR MESSAGE ON ALL TERMINALS. THEN THE STX WILL BE SENT AND A MESSAGE WILL BE PRINTED TO INDICATE THE UNIQUE SELECT CHARACTER USED. CHECK THAT THE CORRECT UNIQUE SELECT CHARACTER HAS ENABLED EACH TERMINAL. IF AN ERROR MESSAGE IS PRINTED BEFORE THE UNIQUE SELECT MESSAGE, THE TERMINAL WHERE THE MESSAGE WAS PRINTED WAS ENABLED BEFORE THE STX WAS RECEIVED. A MESSAGE WILL THEN BE PRINTED TELLING THE OPERATOR TO TYPE ANY PRINTABLE CHARACTER TO CHECK THAT THE KEYBOARD IS ENABLED. WHATEVER CHARACTER IS TYPED WILL BE ECHOED TO THE TERMINAL.

THE FINAL SECTION OF THE TEST WILL USE A DUMMY SELECT CHARACTER. THE ASCII CODE FOR THIS SELECT CHARACTER IS LOCATED BETWEEN THE TWO SELECT CHARACTER TABLE AT THE END OF THE TEST. THIS LOCATION SHOULD CONTAIN THE ASCII CODE OF ANY UNUSED SELECT CHARACTER. THE TEST WILL SEND AN EOT FOLLOWED BY THE DUMMY SELECT CHARACTER AND AN STX. THE ERROR MESSAGE WILL BE LOADED TO ALL TERMINALS AND SHOULD NOT BE PRINTED ON ANY TERMINALS SINCE ALL SHOULD BE DE-SELECTED. NEXT AN ETX (003) FOLLOWED BY THE CURRENT UNIQYUE SELECT CHARACTER AND AN STX WILL BE SENT AND A PRINTED MESSAGE WILL INDICATE THE SELECT CHARACTER USED. ANOTHER EXT WILL BE SENT, FOLLOWED BY THE DUMMY SELECT CHARACTER AND AN STX THIS TIME. A MESSAGE WILL AGAIN BE PRINTED INDICATING THE CURRENT UNIQUE SELECT CHARACTER. ALL SELECTED TERMINALS SHOULD REMAIN SELECTED AND NO OTHER TERMINALS SHOULD GET SELECTED.

5.3.3 TEST 32 - ANSWER BACK OPTION

THIS TEST IS DESIGNED TO TEST THAT THE ANSWER BACK OPTION SENDS THE CORRECT MESSAGE UPON RECEIPT OF AN ENQ (005) OR UPON TYPING CONTROL-E OR THE HERE IS KEY ON THE KEYBOARD. THE TEST WILL SEND AN ENQ (005), READ THE MESSAGE, AND THEN PRINT OUT THE MESSAGE ON THE LA36. THE TEST WILL THEN ASK THE OPERATOR TO DEPRESS THE HERE IS KEY, READ THE MESSAGE, AND THEN PRINT OUT THE MESSAGE. FINALLY, THE TEST WILL TELL THE OPERATOR TO DEPRESS THE CONTROL-E KEY, READ THE MESSAGE, AND PRINT OUT THE MESSAGE. IF THE SELECTIVE ADDRESSING OPTION IS AVAILABLE, THE AUTO ANSWER BACK OPTION WILL NOT RESPOND TO ANOTHER ENQ AFTER THE FIRST ONE RECEIVED. THUS, YOU MAY HAVE TO DEPRESS THE REBOOT KEY TO END THE TEST.

6.3.4 TEST 33 - TOP OF FORM OPTION

THIS TEST IS DESIGNED TO TEST THE FORM FEED CAPIBILITY OF THE TOP OF FORM OPTION. A SET OF INSTRUCTIONS IS PRINTED FOR THE OPERATOR TO REMIND HIM TO DEPRESS THE TOP OF FORM RESET SWITCH AFTER MAKING EACH SWITCH SETTING. UPON COMPLETION OF EACH SETTING, AFTER DEPRESSING THE RESET SWITCH, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO TEST THAT SWITCH SETTING. THE REFERENCE LINES PRINTED WILL INDICATE THE LENGTH FORM FEED JUST EXECUTED AND THE NEXT SWITCH SETTING TO MAKE. THE 3 INCH FORM FEED IS TESTED TWICE BEFORE TESTING THE REMAINING POSITIONS. THE FIRST TIME, 16 OR 17 LINE FEEDS ARE EXECUTED BEFORE DOING THE FORM FEED, DEPENDING ON HOW THE AUTO LINE FEED OPTION IS SET UP. THE DIAGNOSTIC WILL THEN TEST EACH POSITION IN SEQUENCE FROM 3 TO 14 INCHES. THE SINGLE STEP POSITION IS NOT CHECKED.

6.3.5 TEST 34 - HORIZONTAL TAB OPTION

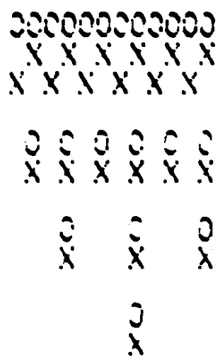
THIS TEST CHECKS THE ABILITY TO SET A TAB IN EVERY COLUMN AND AT PREDETERMINED INTERVALS, AS WELL AS THE ABILITY TO CLEAR ALL TABS. THE PROGRAM SETS A TAB IN THE PREDETERMINED COLUMN, DOES A BACKSPACE, AND PRINTS AN "O". AFTER THE LINE IS PRINTED AND THE TABS ARE SET, A CARRIAGE RETURN IS SENT AND THEN THE PRINT HEAD IS POSITIONED USING TABS AND X'S ARE PRINTED OVER THE O'S. SINCE THE FIRST LINE OF THE TEST SETS A TAB IN EVERY COLUMN, THE PRINT HEAD IS TABED ACROSS THE PAGE TWICE TO TEST ALL TABS. THE FIRST PASS CHECKS THE EVEN NUMBERED COLUMNS WHILE THE SECOND PASS CHECKS THE ODD NUMBERED COLUMNS. THE TEST SETS TABS IN EVERY COLUMN, EVERY OTHER COLUMN, AND EVERY 4, 8, 16, 32, 64, 128, & 132 COLUMNS. ALL HORIZONTAL TABS WILL BE CLEARED AT THE END OF THE TEST IF THE TEST IS RUN TO COMPLETION. IF A RUBOUT IS USED TO EXIT THE TEST BEFORE COMPLETION, THE TABS WILL STILL BE SET.

EXAMPLE:

```
          OOOOOOOOO
           O O O O O
             O   O
                 O
```

WHEN THE AUTO LINE FEED OPTION IS SET UP TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN, THERE WILL BE A BLANK LINE BEFORE EACH REFERENCE LINE OF O'S AND THE X'S WIL BE PRINTED ON THE NEXT LINE UNDER THE O'S. THE FIRST LINE OF O'S WILL HAVE 2 LINES OF X'S UNDER IT, THE FIRST HAVING X'S IN ALL EVEN NUMBERED COLUMNS AND THE SECOND HAVING X'S IN ALL ODD NUMBERED COLUMNS.

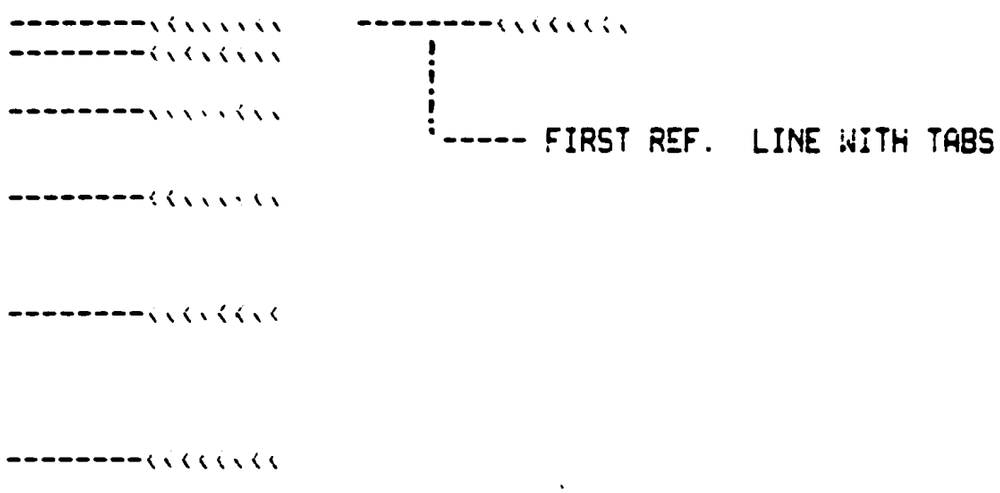
EXAMPLE:



5.3.6 TEST 35 - VERTICAL TAB OPTION

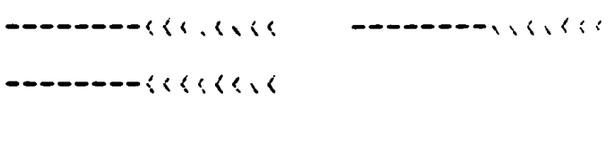
THIS TEST CHECKS THE VERTICAL TAB OPTION BY TESTING THE ABILITY TO SET TABS IN VARIOUS POSITIONS OF A 14 INCH FORM. AN INSTRUCTION IS PRINTED TELLING THE OPERATOR TO SET A 14 INCH FORM LENGTH AND DEPRESS THE TOP OF FORM RESET SWITCH. WHEN READY, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD TO CONTINUE. THE TEST WILL SEND LINE FEEDS, SET TABS, AND PRINT REFERENCE LINES WHEREVER A TAB IS SET. AT THE END OF THE FORM, A MESSAGE WILL INDICATE TO EITHER REMOVE THE REFERENCE PAGE (WITHOUT TOUCHING THE KEYBOARD) OR RESET THE FIRST REFERENCE LINE. TO RESET THE REFERENCE PAGE IN THE PRINTER, OPEN THE PAPER TRACTORS AND PLACE THE FIRST REFERENCE LINE INFRONT OF THE PRINT HEAD. WHEN READY TO CONTINUE, TYPE ANY CHARACTER (EXCEPT RUBOUT) ON THE KEYBOARD. THE TEST WILL THEN REPRINT THE REFERENCE LINES, USING THE TABS INSTEAD OF LINE FEEDS TO ADVANCE THE PAPER. IF THE FIRST REFERENCE PAGE WAS REMOVED, HOLD IT AGAINST THE SECOND REFERENCE PAGE TO CHECK FOR PROPER PAPER ADVANCING USING TABS. IF THE REFERENCE PAGE WAS RESET IN THE PRINTER, THE SECOND SET OF REFERENCE LINES SHOULD HAVE PRINTED DIRECTLY OVER THE FIRST SET EXCEPT ON THE FIRST LINE WHERE THEY SHOULD BE SIDE-BY-SIDE. ALLOW FOR A SLIGHT VARIANCE IN PAPER POSITION WHEN CHECKING THAT THE REFERENCE LINES ARE CORRECT, LOOK FOR FULL LINE DIFFERENCES. THE TEST PRODUCES 0,1,2,3,4,5,6,7,8,9, & 10 BLANK LINES BETWEEN THE REFERNECES LINES, IN THAT ORDER.

EXAMPLE:



THE REFERENCE PATTERN PRODUCED WILL BE DIFFERENT IF THE AUTO LINE FEED OPTION IS SET UP TO PRODUCE AN AUTOMATIC LINE FEED AFTER EVERY RECEIVED CARRIAGE RETURN. THERE WILL, IN FACT, BE ONE EXTRA LINE BETWEEN EACH REFERENCE LINE DUE TO THE AUTO LINE FEED.

EXAMPLE:



DZLADC.P11 TABLE OF CONTENTS

```
			.TITLE	MAINDEC-11-DZLAD-C

		;LA36 TERMINAL DIAGNOSTIC
		;DH11 AND DJ11 INTERFACES

		;AUTHOR:	ROBERT W. BAKER
		;COPYRIGHT 1974,1975, DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754

			.SBTTL	SWITCH REGISTER OPTIONS

		;	SWITCH	POSITION	FUNCTION
		;	15	UP (1)		HALT AT END OF CURRENT TEST
		;		DOWN (0)	CONTINUE NORMAL TEST SEQUENCE
		;	13	UP (1)		DRIVE ONLY SELECTED TERMINAL
		;		DOWN (0)	DRIVE ALL TERMINALS
		;	8	UP (1)		SELECT TEST AT START-UP ONLY
		;		DOWN (0)	START NORMAL TEST SEQUENCE
		;	00 - 07			# OF COLUMNS AT START-UP

			.SBTTL	SPECIAL OPERATIONAL NOTES

		;1.--	BEFORE START UP REFER TO THE DESCRIPTION OF THE BIT-TIME AND
		;	TIMING IS A FUNCTION OF THE CPU MODEL AND MEMORY TYPE AND
		;	SHOULD BE SET UP BEFORE RUNNING THE DIAGNOSTIC.
		;2.--	THE DIAGNOSTIC WILL NOT RUN UNLESS THE ELTAB TABLE IS MANUALLY INITIALIZED.
```

.SBTTL EQUATES

; REGISTER EQUATES

; [illegible] EQUATES

```
                                ;       PROGRAM TRAP EQUATES

[illegible]  [illegible]                TYPE=EMT+0
                                        CHAIN=EMT+1
                                        [illegible]=EMT+2
                                        DELAY=EMT+3
                                        TTYCTL=EMT+4
                                        TTYJTL=EMT+5
                                        CRLF=EMT+6
                                        SCRLF=EMT+7
                                        LF=EMT+10
                                        PRINTC=EMT+11
                                        PRTHDR=EMT+12
                                        READ=EMT+13
                                        [illegible]=EMT+14
                                        [illegible]ASC=EMT+15
                                        [illegible]SWD=EMT+16
                                        [illegible]
                                        [illegible]=EMT+20
                                        [illegible]=EMT+21
                                        [illegible]=EMT+22
```

```
                                        .SBTTL  TRAP CATCHER & STARTING ADDRESSES

                                        .ENABL  ABS
                                        .ENABL  AMA             ;ENABLE ABSOLUTE ADDRESSING
        000000                          .=0
000000  000000                          HALT
        000004                          .=4
000004                          CATCHER:
        000030                          .=30
000030  000036                          EMTINT
        000046                          .=46
000046  010570                          LOGICAL
        000052                          .=52
000052  010000                          010000
        000174                          .=174
000174  000000                  DISPREG:        .WORD   0       ;SOFTWARE DISPLAY REG
000176  000000                  SWREG:          .WORD   0       ;SOFTWARE SWITCH REGISTER
                                ;STARTING ADDRESSES
000200  000137  001000                  JMP     START           ;JMP    START
        001100                          .=1100
001100  000000                  STACK:  0                       ;BOTTOM OF STACK
```

F03


```
                                        .SBTTL  SYMBOL DEFINITIONS

001102  000554                          TIMER:  554                     ;1 MSEC COUNTER FOR ROUTINE "DELAY"

001104  000000                          CNTLSW: OPEN                    ;CONSOLE TERMINAL CONTROL SWITCH
001106  000000                          RTNNO:  OPEN                    ;CONTAINS CURRENT TEST NUMBER
001110  000000                          NXTST:  OPEN                    ;CONTAINS ADDRESS OF NEXT TEST
001112  000000                          WIDTH:  OPEN                    ;CURRENT PAPER WIDTH, BINARY
001114  000000                          REPT:   OPEN                    ;TEMP STORAGE FOR TESTS E0210E022
001116  000000                          SPCNT:  OPEN                    ;COUNTER FOR TEST ROUTINE "PT3"
001120  000000                          CURTST: OPEN                    ;ADDRESS OF CURRENT TEST
001122  000000                          POSI:   OPEN                    ;POSITION COUNTER FOR TESTS E0213E022
001124  000000                          TEMPCH: OPEN                    ;TEMP STOR FOR ECHO TESTS
001126  000000                          PARITY: OPEN                    ;PARITY FLAG
001130  000000                          PCHAR:  OPEN                    ;CHAR CODE WITH PARITY BIT
001132  000000                          LPCNT:  OPEN                    ;COUNTER FOR TEST ROUTINE "PT4"
001134  160020                          DHADR:  160020                  ;ADDRESS OF FIRST DH11, RECALCULATED
001136  160020                          SCR:    160020                  ;SYSTEM CONTROL REGISTER
001140  160022                          NRCRA:  160022                  ;NEXT RECEIVED CHARACTER REG.
001142  160024                          LPR:    160024                  ;LINE PARAMETER REG
001144  160026                          CARA:   160026                  ;CURRENT ADDRESS REGISTER
001146  160030                          BYCR:   160030                  ;BYTE COUNT REG
001150  160032                          BAR:    160032                  ;BUFFER ACTIVE REG
001152  160036                          SSR:    160036                  ;SILO STATUS REG
001154  000000                          CNTDH:  OPEN                    ;NO. OF THE DH11 UNDER TEST
001156  000000                          LINENO: OPEN                    ;NO. OF THE TERMINAL UNDER TEST
001160  000000                          MASK:   OPEN                    ;MASK OF LINE NO. UNDER TEST
001162  000001  000002  000004          BITTAB: 1,2,4                   ;TABLE OF LINE NO. MASKS
001170  000010  000020  000040                  10,20,40
001176  000100  000200  000400                  100,200,400
001204  001000  002000  004000                  1000,2000,4000
001212  010000  020000  040000                  10000,20000,40000
001220  100000                                  100000
001222  000000                          ACTIV:  OPEN                    ;TEST ACTIVE INDICATOR
001224  000000                          IOSW:   OPEN                    ;=0,DH11 UNDER TEST--=1,DJ11 UNDER TEST
001226  000000                          DJCNT:  OPEN                    ;COUNT OF DJ11'S ON BUS
001230  000000                          DHCNT:  OPEN                    ;COUNT OF DH11'S ON BUS
001232  000000                          SCR1:   OPEN                    ;TEMP STORAGE USED BY PRINTC
001234  000000                          SCR2:   OPEN                    ;TEMP STORAGE USED BY PRINTC
[illegible]  160010                     [illegible]: 160010             ;DJ11 CONTROL STATUS REG
[illegible]  [illegible]                [illegible]: [illegible]        ;DJ11 TRANSMITTER CONTROL REG
[illegible]  [illegible]                [illegible]: [illegible]        ;DJ11 TRANSMITTER BUFFER REG
[illegible]  [illegible]                [illegible]: [illegible]        ;[illegible] REG ADDRESS
```

```
                                        .SBTTL  PROGRAM INITIALIZATION & CONTROL

                                ;*********
                                ;
                                ;PROGRAM START
                                ;
                                ;*********

001246  012737  177777  001224  START1: MOV     #177777,ICSW    ;SET UP FOR DJ11 TEST
001254  000[illegible]                  BR      STARTX
001256  005037  001224          START:  CLR     ICSW            ;SET UP FOR DH11 TESTS

001262  012706  001100          STARTX: MOV     #SPBOT,SP       ;SET STACK POINTER
001266  013746  000006                  MOV     6,-(SP)         ;SAVE CURRENT VECTORS
001272  013746  000004                  MOV     4,-(SP)
001276  012737  001316  000004          MOV     #10$,4          ;SET TIMEOUT VECTOR
001304  005737  177570                  TST     @SR             ;TRY REFFERENCING SW REG
001310  000404                          BR      11$             ;BRANCH IF DID NOT TIME OUT
001312  012737  000176  001244  10$:    MOV     #SWREG,SR       ;POINT TO SOFTWARE SW REG
001320  022626                          CMP     (SP)+,(SP)+     ;RESET STACK
001322  012637  000004          11$:    MOV     (SP)+,4         ;RESET VECTOR
001326  012637  000006                  MOV     (SP)+,6
001332  [illegible]                     CLEAN                   ;CLEAN UP
[illegible]                                                     ;INITIALIZE TERMINAL CONTROL SWITCH
[illegible]                     000024                          ;SET [illegible] POWER FAIL ROUTINE
```

H03


```
                                        ;**********
                                        ;
                                        ;THIS NEXT PART CHECKS THE PRESENCE OF DJ11 OR DH11
                                        ;STARTING AT 776010. A MESSAGE WILL BE PRINTED ON
                                        ;THE CONSOLE TERMINAL INDICATING THE NUMBER
                                        ;PRESENT. THE PRINTER DIAGNOSTIC WILL ADDRESS EACH OF
                                        ;THE TERMINALS IN THE SYSTEM
                                        ;
                                        ;**********

001346  012737  001400  000004          MOV     #END3,@#ACHER   ;INIT TIME OUT TRAP
001354  005037  001266                  CLR     DJCNT           ;CLEAR DJ11 COUNTER
001360  012700  160010                  MOV     #160010,R0      ;ADDR OF FIRST DJ11
001364  005710                  1$:     TST     (R0)            ;REF DJ11
001366  062700  000010                  ADD     #10,R0          ;SET R0 TO NEXT DJ11
001372  005237  001266                  INC     DJCNT           ;INCREMENT COUNT OF DJ11'S
001376  000772                  BR      1$                      ;TEST PRESENCE OF NEXT DJ11

001400  022626                  END3:   POPSPE                  ; POP 2 FROM STACK
001402  030027  000010                  BIT     R0,#10          ;CHECK IF R0 IS MULTIPLE OF 20
001406  001402                          BEQ     .+4             ;SKIP IF YES
001410  062700  000010                  ADD     #10,R0          ;MAKE R0 FIRST DH11 ADDR
001414  010037  001134          1$:     MOV     R0,@#ADDR       ;SAVE AS FIRST DH11 ADDRES
001420  012737  001446  000004          MOV     #END4,@#ACHER   ;SET TIME OUT TRAP
001426  005037  001270                  CLR     DHCNT           ;CLEAR COUNT OF DH11'S
001432  005710                  2$:     TST     (R0)            ;TEST IF DH11 IS PRESENT
001434  062700  000020                  ADD     #20,R0          ;YES, SET R0 TO NEXT DH11
001440  005237  001270                  INC     DHCNT           ;INCREMENT COUNT OF DH11'S
001444  000772                  BR      2$                      ;CHECK IF NEXT ONE IS PRESENT

001446  022626                  END4:   POPSPE                  ;POP 2 FROM STACK
```

I03


```
                                        ;**********
                                        ;
                                        ;READ THE PAPER WIDTH, NUMBER OF COLUMNS,
                                        ;FROM SWITCH REGISTER POSITIONS 0-7. SAVE AND
                                        ;CONVERT TO 3 ASCII CHARACTERS. A WIDTH GT132
                                        ;OR LT30 COLUMNS (DECIMAL) WILL BE ABORTED TO 132.
                                        ;
                                        ;**********
001450  013701  177570                          MOV     @SR,R1          ;PUT (SR) INTO R1
001454  042701  177400                          BIC     #177400,R1      ;SAVE ONLY BITS 0-7
001460  020127  000204                          CMP     R1,#204         ;TEST NO. COLUMN GT132
001464  101003                                  BHI     2$              ;COLUMNS GT132, DEFAULT TO 132
001466  020127  000035                  1$:     CMP     R1,#35          ;CHECK IF NO. COLUMNS LT 30
001472  101002                                  BHI     3$              ;NOT LT 30 NOR GT 132
001474  012701  000204                  2$:     MOV     #204,R1         ;COLUMNS LT 30 OR GT 132, DEFAULT
001500  010137  001112                  3$:     MOV     R1,WIDTH        ;SAVE NO. COLUMNS IN WIDTH
001504  012700  017045                          MOV     #HORD,R0        ;ADDR TO STORE ASCII COLUMN VALUE
001510  012702  000003                          MOV     #3,R2           ;DO A 3 CHAR. CONVERSION
001514  104015                                  BTOASC                  ;CONVERT NO. COLUMNS TO ASCII
001516  005037  001106                          CLR     RTNNO           ;SET ROUTINE NO = 0
001522  000401                          4$:     BR      5$              ;PRINT TITLE FIRST TIME
001524  000405                                  BR      6$              ;SKIP IT AFTER FIRST TIME
001526  104002                          5$:     TYPEM                   ;PRINT DIAGNOSTIC HEADER
001530  016520                                  STARTM
001532  012737  000240  001522                  MOV     #NOP,4$         ;TAKE OUT BRANCH INSTR
001540  005737  001224                  6$:     TST     IOSW            ;CHECK IF DJ11 OR DH11 UNDER TEST
001544  001440                                  BEQ     10$             ;BRANCH IF DH11
001546  013701  001226                          MOV     DJCNT,R1        ;GET NUMBER OF DJ11'S
001552  012700  017004                          MOV     #DJ11S,R0       ;ADDR TO STOR ASCII CHAR
001556  012702  000002                          MOV     #2,R2           ;NO. OF ASCII CHARS =2
001562  104015                                  BTOASC                  ;CONVERT TO ASCII
001564  104006                                  CRLF
001566  104002                                  TYPEM
001570  017004                                  DJ11S                   ;OUTPUT MESSAGE
```

```
                                        ;********
                                        ;
                                        ; START ALL DJ11 RECEIVER SCANNERS
                                        ;
                                        ;********

001572  012701  160010          MOV     #160010,R1      ;ADDR OF FIRST DJ11 SCR
001576  013703  001226          MOV     DJCNT,R3        ;NO. OF DJ11 TO R3
001602  001002                  BNE     9$              ;BRANCH IF COUNT IS NOT ZERO
001604  000000          7$:     HALT
001606  000775                  BR      7$              ;DO NOT CONTINUE
001610  052711  000010  8$:     BIS     #10,(R1)        ;CLEAR MOS
001614  012700  000005  9$:     MOV     #5,R0           ;DELAY TIME TO R0
001620  104003                  DELAY
001622  031127  000020          BIT     (R1),#20        ;TEST IF CLEAR STILL BUSY
001626  001372                  BNE     9$              ;BRANCH IF BUSY
001630  052711  000001          BIS     #1,(R1)         ;START SCANNER
001634  062701  000010          ADD     #10,R1          ;ADDR OF NEXT SCR
001640  005303                  DEC     R3              ;DEC COUNT OF DJ11
001642  001362                  BNE     9$              ;NOT ZERO, START NEXT ONE
001644  000412                  BR      11$
001646  013701  001230  10$:    MOV     DHCNT,R1        ;NO. OF DH11'S TO R1
001652  012700  016755          MOV     #DH11S,R0       ;ADDR TO STORE ASCII CHAR
001656  012702  000002          MOV     #2,R2           ;NO. OF CHAR TO CONVERT
001662  104015                  BTOASC                  ;CONVERT TO ASCII
001664  104006                  CRLF
001666  104002                  TYPEM                   ;OUTPUT MESSAGE
001670  016755                  DH11S
001672  032777  000400  177344  11$:    BIT     #BIT8,@SR       ;CKECK IF WANT TEST SELECTION?
001700  001004                  BNE     12$             ;BRANCH IF BIT 8 IS SET (YES)
001702  012737  006410  001110          MOV     #PTO,NXTST      ;STARTUP PRINTING TESTS
001710  000430                  BR      CHAINY
001712  104002          12$:    TYPEM                   ;TYPE SELECT TEST NO. MESSAGE
001714  017257                  MESG3
001716  005037  001222          CLR     ACTIV           ;SET TEST ACTIVE STATE NOT ACTIVE
001722  005737  001224          TST     IOSW            ;DH11 OR DJ11
001726  001452                  BEQ     TTYIA           ;WAIT FOR TERMINAL CONTROL FROM DH11
001730  000435                  BR      TTYJA           ;WAIT FOR TERMINAL CONTROL FROM DJ11


                                        ;**********
                                        ;
                                        ;CLEAN--INITIALIZES POINTERS BEFORE ENTERING A TEST
                                        ;
                                        ;**********

001732  012737  000006  000034  $CLEAN: MOV     #6,MACHER       ;SET UP MACHINE ERROR VECTOR
001740  005046                  CLR     -(SP)           ;CLEAR PROCESSOR STATUS WORD
001742  000002                  RTI                     ;RETURN
```

```
                                        ;**********
                                        ;
                                        ;CHAINN--THIS PORTION IS THE COMMON RETURN
                                        ;       FOR ALL TESTS.
                                        ;
                                        ;**********
001746  032737  000001  001104  CHAINN: BIT     #1,CNTLSW       ;CHECK IF TERMINAL CONTROL
001754  001405                         BEQ     2$              ;BRANCH IF NOT
001756  005737  001224                 TST     IOSW            ;DH11 OR DJ11?
001762  001401                         BEQ     1$              ;BRANCH IF DH11
001764  104005                         TTYJTL                  ;WAIT FOR DJ11 TERMINAL CONTROL
001766  104004                 1$:     TTYCTL                  ;WAIT FOR DH11 TERMINAL CONTROL
001770  022626                 2$:     POPSP2                  ;CORRECT STACK
                                        ;**********
                                        ;
                                        ;       IF THE SR BIT 15 IS SET,THE CPU WILL HALT HERE WITH
                                        ;       THE TEST NUMBER IN R0. PRESS CONTINUE TO
                                        ;       RUN NEXT TEST
                                        ;
                                        ;**********
001772  005777  177246          CHAINY: TST     @SR             ;CHECK SW REG.
001776  100003                         BPL     1$              ;BRANCH IF NO HALT
002000  113700  001106                 MOVB    RTNNO,R0        ;CURRENT TEST NUMBER TO R0
002004  000000                         HALT
002006  104017                 1$:     CLEAN                   ;CLEAN UP
002010  012706  001100                 MOV     #SPBOT,SP       ;SET UP STACK POINTER
002014  104016                         FORWD                   ;SET UP VALUES FOR NEXT TEST
002016  000177  177076                 JMP     @CURTST         ;GO TO TEST


                                        ;**********
                                        ;
                                        ;TTYJ-- THIS ROUTINE IS USED WHEN THE DJ11'S ARE UNDER
                                        ;       TEST, OTHERWISE THE COMMENTS  AND INSTRUCTIONS ARE
                                        ;       THE SAME AS FOR TTY1.
                                        ;
                                        ;**********
002022  022626                 TTYJ:   POPSP2                  ;CORRECT STACK
002024  005737  001222         TTYJA:  TST     ACTIV           ;TEST IF ENTRY IS FROM A TEST
002030  001402                         BEQ     1$              ;BRANCH IF NOT
002032  000137  002410                 JMP     TTY1G
002036  004737  003016         1$:     JSR     PC,SCANDJ       ;LOOK FOR INPUT
002042  004737  003124                 JSR     PC,SETDJ        ;SET TERMINAL AS CONSOLE
002046  000137  002134                 JMP     TTY1B           ;GO TO CONTROL
```

```
                                        ;**********
                                        ;
                                        ;TTY1-- THIS ROUTINE IS USED WHEN THE DH11'S ARE UNDER TEST. IT PROCESSES
                                        ;       THE RESPONSE TO THE MESSAGE "SELECT TEST NO.". THE RESPONSE
                                        ;       MUST BE THE TWO DIGIT OCTAL TEST NO. FOLLOWED BY:
                                        ;               "L" TO LOOP ON TEST
                                        ;               "S" TO SEQUENCE ON TEST
                                        ;               "." TO EXECUTE TEST ONCE
                                        ;       ALL SPACES ARE IGNORED AND AN ILLEGAL INPUT WILL BE FLAGED
                                        ;       BY A "?" AND THE RETYPING OF THE ABOVE MESSAGE. THE FIRST
                                        ;       TERMINAL TO RESPOND IS THE TERMINAL UNDER TEST. ALL
                                        ;       PRINTER TESTS WILL OUTPUT TO ALL TERMINALS IF SR BIT 13 IS = 1
                                        ;       WHILE THE ECHO TESTS WILL RESPOND TO THE PRINTER UNDER TEST ONLY.
                                        ;
                                        ;**********

002052  022626                  TTY1:   POPSP2                  ;CORRECT STACK
002054  005737  001230          TTY1A:  TST     DHCNT           ;BE SURE THAT THERE ARE DH11'S
002060  001002                          BNE     2$              ;BRANCH IF YES
002062  000000                  1$:     HALT
002064  000776                          BR      1$              ;DO NOT CONTINUE
002066  005737  001222          2$:     TST     ACTIV           ;TEST IF ENTRY IS FROM A TEST
002072  001146                          BNE     TTY1B           ;BRANCH IF IT IS
002074  004737  002604                  JSR     PC,SCANDH       ;LOOK FOR INPUT
002100  004737  002660                  JSR     PC,SETERM       ;SET TERMINAL DATA
002104  042700  177600          TTY1B:  BIC     #177600,R0      ;SAVE ONLY CHAR
002110  010037  001124                  MOV     R0,TEMPCH       ;GET CHAR
002114  020027  000040          1$:     CMP     R0,#40          ;CHECK IF CHAR IS A SPACE
002120  001002                          BNE     2$              ;BRANCH IF NOT
002122  104013                          READ                    ;SPACE, LOOP WAITING FOR NEXT CHAR
002124  000773                          BR      1$              ;GOT ONE
002126  012700  000036          3$:     MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
002132  104003                          DELAY
002134  013700  001124                  MOV     TEMPCH,R0       ;GET CHAR
002140  104021                          ECHO                    ;ECHO CHAR
002142  104020                          TESTC                   ;GO TEST CHAR
002144  000421                          BR      11$             ;ERROR IN CHAR
002146  010005                          MOV     R0,R5           ;OK, SAVE DIGIT IN R5, POS 5-3
002150  006305                          ASL     R5
002152  006305                          ASL     R5
002154  006305                          ASL     R5
002156  104013                          READ                    ;GO WAIT FOR NEXT CHAR
002160  020027  000040          3$:     CMP     R0,#40          ;CHECK IF A SPACE
002164  001002                          BNE     4$              ;BRANCH IF NOT A SPACE
002166  104013                          READ                    ;WAIT FOR CHAR
002170  000773                          BR      3$              ;GOT ONE, ECHO IT
002172  012700  000036          4$:     MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
002176  104003                          DELAY
002200  013700  001124                  MOV     TEMPCH,R0       ;GET CHAR
002204  104021                          ECHO                    ;ECHO CHAR
002206  104020                          TESTC                   ;GO CHECK CHAR
002210  000555                  11$:    BR      NG              ;ERROR IN CHAR
002212  060005                          ADD     R0,R5           ;OK,R5 IS NOW OCTAL TEST NO.
002214  104013                          READ                    ;GO WAIT FOR TERMINATOR
```

```
  436  002216  020027  000040          5$:   CMP     R0,#40          ;CHECK IF A SPACE
  437  002222  001002                        BNE     6$              ;BRANCH IF NOT A SPACE
  438  002224  104013                        READ                    ;SPACE,WAIT SOME MORE
  439  002226  000773                        BR      5$              ;GOT ONE , ECHO IT
  440  002230  012700  000036          6$:   MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
  441  002234  104003                        DELAY
  442  002236  013700  001124                MOV     TEMPCH,R0       ;GET CHAR
  443  002242  104021                        ECHO                    ;ECHO CHAR
  444  002244  042700  000040                BIC     #BIT5,R0        ;ALLOW LOWER CASE OR UPPER CASE
  445  002250  020027  000114                CMP     R0,#114         ;IS IT AN "L"
  446  002254  001413                        BEQ     7$              ;BRANCH IF YES
  447  002256  020027  000123                CMP     R0,#123         ;NO, IS IT AN "S"
  448  002262  001414                        BEQ     8$              ;BRANCH IF YES
  449  002264  023727  001124  000056        CMP     TEMPCH,#56      ;NO, IS IT A "."
  450  002272  001124                        BNE     NG              ;NO, ERROROR
  451  002274  012737  000001  001104        MOV     #1,CNTLSW       ;SET BIT 0 ONLY IN CNTLSW
  452  002302  000407                        BR      9$
  453  002304  012737  004001  001104  7$:   MOV     #4001,CNTLSW    ;SET BITS 11 AND 0
  454  002312  000403                        BR      9$
  455  002314  012737  000401  001104  8$:   MOV     #401,CNTLSW     ;SET BITS 8 AND 0
  456  002322  104017                  9$:   CLEAN                   ;CLEAN UP
  457  002324  012706  001100                MOV     #SPBOT,SP       ;RESET SP
  458  002330  010500                        MOV     R5,R0           ;TEST NO TO R0
  459  002332  020027  000040                CMP     R0,#40          ;CHECK IF TEST NO. IS EQ OR GT 40
  460  002336  103102                        BHIS    NG              ;ERROR IF YES
  461  002340  020027  000020                CMP     R0,#20          ;CHECK IF THIS IS AN ECHO TEST
  462  002344  103406                        BLO     10$             ;BRANCH IF NOT
  463  002346  020027  000030                CMP     R0,#30          ;OPTION TEST?
  464  002352  103003                        BHIS    10$             ;ALLOW LOOP ON OPTION TEST
  465  002354  012737  000001  001104        MOV     #1,CNTLSW       ;YES, FORCE TO ONE TIME ONLY
  466  002362  006300                  10$:  ASL     R0              ;TEST NO. * 2
  467  002364  016037  003156  001110        MOV     PRGTAB(R0),NXTST;ADDR OF TEST TO NXTST
  468  002372  001464                        BEQ     NG              ;BRANCH IF ILLEGAL TEST
  469  002374  104016                        FORWD                   ;SET UP TEST PARAMETERS
  470  002376  012737  000001  001222        MOV     #1,ACTIV        ;SET TEST ACTIVE IND
  471  002404  000177  176510                JMP     @CURTST         ;GO TO TEST
  472  002410  017700  176524          TTY1G:MOV     @NRCRA,R0       ;TEST ACTIVE,CHECK INPUT FROM DH:1
  473  002414  100040                        BPL     TTY1L           ;BRANCH IF NO DATA
  474  002416  010004                        MOV     R0,R4           ;DATA, SAVE IT
  475  002420  000300                        SWAB    R0              ;RIGHT JUSTIFY LINE NO.
  476  002422  042700  177760                BIC     #177760,R0      ;CLEAR ALL BUT LINE NO.
  477  002426  020037  001156                CMP     R0,LINENO       ;CHECK IF LINE NO. IS SAME AS TEST LINE
  478  002432  001366                        BNE     TTY1G           ;NOT SAME, SEE IF ANY MORE IN SILO
  479  002434  010400                        MOV     R4,R0           ;LINES ARE THE SAME, GET CHAR
  480  002436  042700  177600                BIC     #177600,R0      ;SAVE 7 BITS OF CHAR
  481  002442  020027  000177                CMP     R0,#177         ;CHECK IF A RUBOUT
  482  002446  001360                        BNE     TTY1G           ;NOT A RUBOUT, SEE IF ANY MORE
  483  002450  012706  001100          TTY1H:MOV     #SPBOT,SP       ;RESET STACK
  484  002454  012737  000001  001104        MOV     #1,CNTLSW       ;CLEAR BITS 11 AND 8
  485  002462  012700  000036                MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
  486  002466  104003                        DELAY
  487  002470  104002                        TYPEM                   ;OUTPUT MESSAGE
  488  002472  017257                        MESG3
  489  002474  005037  001222                CLR     ACTIV           ;CLEAR TEST ACTIVE STATE
```

```
 490  002500  005737  001224                    TST     IOSW            ;DJ11 OR DH11 ?
 491  002504  001402                            BEQ     1$              ;BRANCH IF DH11
 492  002506  000137  002024                    JMP     TTYJA           ;WAIT FOR NEXT TEST FROM DJ11
 493  002512  000137  002054            1$:     JMP     TTY1A           ;WAIT FOR NEXT TEST FROM DH11
 494  002516  032737  004000  001104    TTY1L:  BIT     #BIT11,CNTLSW   ;CHECK IF LOOP ON TEST
 495  002524  001401                            BEQ     1$              ;BRANCH IF NO LOOP
 496  002526  000002                            RTI                     ;GO LOOP ON TEST
 497  002530  032737  000400  001104    1$:     BIT     #BIT8,CNTLSW    ;CHECK IF LOOP ON SEQUENCE
 498  002536  001744                            BEQ     TTY1H           ;BRANCH IF NO
 499  002540  000137  001772                    JMP     CHAINY          ;GO LOOP ON SEQUENCE
 500  002544  012700  000036            NG:     MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
 501  002550  104003                            DELAY
 502  002552  112700  000077                    MOVB    #77,R0          ;"?" TO TEMPCH
 503  002556  104021                            ECHO                    ;PRINT A ?
 504  002560  000733                            BR      TTY1H           ;TRY AGAIN FROM DH11
 505
 506
 507                                    ;**********
 508                                    ;
 509                                    ;FORWARD--THIS ROUTINE TRANSFERS THE 2 ARGUMENTS
 510                                    ;       FROM THE TEST ROUTINE. THEY ARE:
 511                                    ;       1- ROUTINE NUMBER
 512                                    ;       2- ADDRESS OF NEXT TEST
 513                                    ;
 514                                    ;**********
 515
 516  002562  013705  001110            $FORWD: MOV     NXTST,R5        ;ADDR OF NEXT TEST TO R5
 517  002566  012537  001106                    MOV     (R5)+,RTNNO     ;GET NUMBER OF NEXT TEST
 518  002572  012537  001110                    MOV     (R5)+,NXTST     ;GET ADDR OF FOLLOWING TEST
 519  002576  010537  001120                    MOV     R5,CURTST       ;ENTRY POINT TO TEST IN CURTST
 520  002602  000002                            RTI                     ;EXIT
 521
 522
 523                                    ;**********
 524                                    ;
 525                                    ;SCANDH - ROUTINE TO SCAN DH CHANNELS LOOKING FOR INPUT
 526                                    ;
 527                                    ;**********
 528
 529  002604  013701  001230            SCANDH: MOV     DHCNT,R1        ;COUNT OF DH11'S TO R1
 530  002610  005037  001154                    CLR     CNTDH           ;CLEAR DH11 POSITION COUNTER
 531  002614  013700  001134                    MOV     DHADR,R0        ;ADDR OF FIRST DH11 TO R0
 532  002620  005720                            TST     (R0)+           ;ADDR OF NRCRA
 533  002622  010037  001140                    MOV     R0,NRCRA        ;SET UP NRCRA ADDRESS
 534  002626  017700  176306            1$:     MOV     @NRCRA,R0       ;GET NEXT CHAR FROM SILO
 535  002632  100410                            BMI     2$              ;BRANCH IF DATA IS PRESENT
 536  002634  005301                            DEC     R1              ;DECREMENT COUNT OF DH11'S
 537  002636  001762                            BEQ     SCANDH          ;START OVER IF ALL DONE
 538  002640  062737  000020  001140            ADD     #20,NRCRA       ;SET UP ADDR FOR NEXT DH11
 539  002646  005237  001154                    INC     CNTDH           ;INC DH11 POSITION COUNTER
 540  002652  000765                            BR      1$              ;GO CHECK NEXT DH11 ON SCS
 541  002654  010004                    2$:     MOV     R0,R4           ;SAVE LINE NO. AND CHAR
 542  002656  000207                            RTS     PC              ;RETURN
```

B04


```
                                        ;***********
                                        ;
                                        ;SETERM - THIS ROUTINE IS USED TO SET UP THE REGISTER ADDRESSES OF
                                        ;        THE TERMINAL CURRENTLY UNDER TEST.
                                        ;
                                        ;***********

002660  012701  001140          SETERM: MOV     NRDRA,R1        ;GET ADDR OF CURRENT NRDRA
                                        TST     -(R1)           ;CAL ADDR OF SCR
                                        MOV     R1,SCR          ;STORE SCR ADDR
                001136                  CMP     (R1)+,(R1)+     ;ADD 4
                                        MOV     R1,LPR          ;STORE LPR ADDR
                001142                  TST     (R1)+           ;ADD 2
                                        MOV     R1,CARA         ;STORE CARA ADDR
                001144                  TST     (R1)+           ;ADD 2
                                        MOV     R1,BYCR         ;STORE BYCR ADDR
                001146                  TST     (R1)+           ;ADD 2
                                        MOV     R1,BAR          ;STORE BAR ADDR
                001150                  CMP     (R1)+,(R1)+     ;ADD 4
002722  022121                          MOV     R1,SSR          ;STORE SSR ADDR
002724  010137  001152                  SWAB    R0              ;RIGHT JUSTIFY LINE NO.
002730  000300                          BIC     #177760,R0      ;SAVE ONLY LINE NO.
002732  042700  177760                  MOV     R0,@SCR         ;SET UP SCR
                                        MOV     #DH11DD,R1      ;GET ADDR OF VP TABLE
                001154          1$:     DEC     CNTDH           ;CAL WHICH DH11 IS UNDER TEST
                                        BMI     2$              ;BRANCH IF THIS IS THE ONE
                000020                  ADD     #20,R1          ;REPOSITION R1 IN VP TABLE
                001154                  INC     CNTDH           ;DEC DH11 POSITION COUNTER
                                        BR      1$
                001156          2$:     MOV     R0,LINENO       ;SAVE LINE NO.
                                        ASL     R0              ;CREATE POINTER TO TABLE
                                        ADD     R0,R1           ;ADD LINE NO. TO VP TAB PNTR
                                        MOV     (R1),@LPR       ;PUT VP INTO LPR
                                        ASL     R0              ;CAL PNTR INTO LINE MASK TABLE
                                        MOV     [illegible],MASK ;PUT LINE MASK INTO MASK
                                        MOV     [illegible],R0  ;RESTORE LINE NO AND CHAR
                                        RTS     PC              ;RETURN
```

```
;***********
;
;SCANDJ - ROUTINE TO SCAN CHANNELS LOOKING FOR INPUT
;
;*********

SCANDJ: MOV     DJCNT,R1        ;COUNT OF DJ11 TO R1
        CLR     CNTCH           ;CLEAR POS. COUNTER
        MOV     #160012,R0      ;ADDR OF FIRST RECV BUFFER TO R0
        MOV     #ELTAB,R3       ;ADDR OF ELTAB TO R3
1$:     MOV     (R0),R2         ;GET RECV BUFFER
        BMI     3$              ;BRANCH IF DATA
2$:     DEC     R1              ;NO DATA, DEC COUNT OF DJ11
        BEQ     SCANDJ          ;START OVER IF ALL CHECKED
        ADD     #10,R0          ;ADDR OF NEXT RBUF
        TST     (R3)+           ;INCREMENT ELTAB POINTER
        INC     CNTCH           ;INCREMENT POS COUNTER
        BR      1$              ;DO NEXT DJ11
3$:     MOV     R2,R4           ;GET CONTENTS OF RBUF
        SWAB    R2
        BIC     #177760,R2      ;SAVE ONLY THE LINE NO.
        MOV     R2,LINENO       ;SAVE LINE NO.
        ASL     R2              ;LINE NO.*2
        ADD     #BITTAB,R2      ;CAL ADDR OF LINE MASK
        MOV     (R2),MASK       ;SAVE LINE MASK
        BIT     MASK,(R3)       ;CHECK IF LINE EXISTS
        BEQ     2$              ;BRANCH IF NOT
        MOVB    R4,R2           ;RESTORE R2 WITH CHAR
        BEQ     2$              ;BRANCH IF NULL
        RTS     PC              ;RETURN

;***********
;
;SETDJ - THIS ROUTINE IS USED TO SET UP THE PARAMETERS
;        FOR THE DJ11 TERMINAL CURRENTLY UNDER TEST.
;
;***********

SETDJ:  MOV     R0,NPCRA        ;SAVE ADDR FOR READ & [illegible]
        SUB     #2,R0           ;CAL ADDR OF CSR
        MOV     R0,CSR          ;ADDR OF CURRENT CSR
        ADD     #4,R0           ;CAL ADDR OF TCR
        MOV     R0,TCR          ;SAVE ADDR OF CURRENT CSR
        ADD     #2,R0           ;CAL ADDR OF TBUF
        MOV     R0,TBUF         ;SAVE ADDR OF CURRENT TBUF
        MOV     R4,R2           ;RESTORE CONTENTS OF RECV BUFFER AGAIN
        RTS     PC              ;RETURN
```

D04


```
                    .SBTTL  TEST ADDRESS TABLE

[illegible]  PRGTAB: [illegible]  ;DATA PATH TEST
[illegible]           [illegible]  ;PRINTER CHARACTER TEST
[illegible]           [illegible]  ;NON-PRINTING CHARACTER TEST
[illegible]           [illegible]  ;CARRIAGE RETURN TEST
[illegible]           [illegible]  ;MULTIPLE LINE FEED TEST
[illegible]           [illegible]  ;SINGLE LINE FEED TEST
[illegible]           [illegible]  ;BACKSPACE TEST
[illegible]           [illegible]  ;OVERPRINT TEST
[illegible]           [illegible]  ;PRINTING FREQUENCY SWEEP TEST
[illegible]           [illegible]  ;RIBBON FEED TEST
[illegible]           [illegible]  ;PRINTER BELL TEST
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL PRINTER TEST
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL PRINTER TEST
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL PRINTER TEST
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL PRINTER TEST
[illegible]           [illegible]  ;LIFE TEST

[illegible]           [illegible]  ;CHARACTER ECHO TEST
[illegible]           [illegible]  ;LINE ECHO TEST, FAST RATE
[illegible]           [illegible]  ;LINE ECHO TEST, SLOW RATE
[illegible]           [illegible]  ;CHARACTER/CODE ECHO TEST
[illegible]           [illegible]  ;SELECTIVE PATTERN ECHO TEST
[illegible]           [illegible]  ;BELL ECHO TEST
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL ECHO TESTS
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL ECHO TESTS

[illegible]           [illegible]  ;SECONDARY CHARACTER SET OPTION
[illegible]           [illegible]  ;SELECTIVE ADDRESSING OPTION
[illegible]           [illegible]  ;AUTO ANSWER BACK OPTION
[illegible]           [illegible]  ;FORM FEED OPTION
[illegible]           [illegible]  ;HORIZONTAL TAB OPTION
[illegible]           [illegible]  ;VERTICAL TAB OPTION
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL OPTION TESTS
[illegible]           [illegible]  ;SPARE FOR ADDITIONAL OPTION TESTS
```

```
                                  .SBTTL  EMT TRAP DECODER

                                  ;***********
                                  ;
                                  ;EMTINT--SERVICE ROUTINES FOR TRAPS THROUGH LOC. 30 AND 34.
                                  ;
                                  ;***********

003256  011646                    EMTINT: MOV     @SP,-(SP)       ;GET SAVED PC
003260  162716  000002                    SUB     #2,@SP          ;DECREMENT PC BY TWO
003264  017616  000000                    MOV     @(SP),@SP
003270  121627  000022                    CMPB    @SP,#22         ;CHECK THAT CALL IS WITHIN LIMITS
003274  101402                            BLOS    2$              ;BRANCH IF OK
003276  000000                    1$:     HALT
003300  000776                            BR      1$
003302  006116                    2$:     ROL     @SP             ;EMT ARGUMENT *2
003304  042716  177001                    BIC     #177001,@SP     ;REMOVE 7 MSB
003310  062716  003332                    ADD     #EMTTAB,@SP     ;FORM EMT RTN ADDRESS
003314  017616  000000                    MOV     @(SP),@SP
003320  005046                            CLR     -(SP)           ;CLEAR PSW
003322  012746  003330                    MOV     #3$,-(SP)
003326  000002                            RTI
003330  000136                    3$:     JMP     @(SP)+          ;GO TO EMT ROUTINE

003332  003776                    EMTTAB: TYP                     ;MESSAGE OUTPUT ROUTINE
003334  [illegible]                       $CHAINN                 ;COMMON TEST EXIT
003336  004006                            $TYPY                   ;MESSAGE OUTPUT ROUTINE, MULTI DEVICES
003340  [illegible]                       DLY                     ;DELAY ROUTINE
003342  [illegible]                       TTY1                    ;DH11 CONSOLE TERMINAL CONTROL
003344  [illegible]                       TTY4                    ;DJ11 CONSOLE TERMINAL CONTROL
003346  [illegible]                       $CRLF                   ;CARRIAGE RETURN, ALL TERMINALS
003350  [illegible]                       $SCRLF                  ;CARRIAGE RETURN, CONSOLE TERMINAL
003352  004362                            $LF                     ;LINE FEED ONLY, ALL TERM'S
003354  [illegible]                       $PRTC                   ;PRINT CHAR, ALL TERM'S
003356  [illegible]                       $PRHDR                  ;PRINT TEST HEADER
003360  [illegible]                       $READ                   ;READ CHAR
003362  [illegible]                       $CR                     ;CARRIAGE RETURN ONLY, ALL TERM'S
003364  [illegible]                       $BTASC                  ;BINARY TO ASCII CONVERSION
003366  [illegible]                       $FORMC
003370  [illegible]                       $CLEAN
003372  [illegible]                       $[illegible]            ;CHECK CHAR
003374  [illegible]                       $E[illegible]           ;PRINT CHAR, CONSOLE ONLY
003376  [illegible]                       $[illegible]            ;CHECK IF READY
```

```
                        .SBTTL  COMMON ROUTINES

                        ;**********
                        ;
                        ;ECHO-- THIS ROUTINE ECHOS CHARACTERS ON THE TERMINAL UNDER TEST.
                        ;
                        ;**********

001224                  $ECHO:  TST     ICSW            ;DJ11 OR DH11
                                BNE     ECHODJ          ;BRANCH IF DJ11
175536  001160                  BIT     #BAR,MASK       ;CHECK IF OK TO SEND TO DH11
                                BNE     $ECHO           ;NO,WAIT UNTIL OK
001124                          MOV     R0,TEMPCH       ;CHAR INTO TEMPCH
001156  175505                  MOV     LINENO,@SCR     ;SET LINE NUMBER
001154  175506                  MOV     #TEMPCH,@CARA   ;OK,PUT ADDR OF CHAR INTO CARA
000002                          MOV     #-1,@BYCR       ;SET CHAR COUNT TO 1
000020                          MOV     #20,@SSR        ;SET SILO OVERFLOW TO 16
001160                          MASK,@BAR               ;SET TRANSMIT BIT
                                RTS     PC              ;RETURN
001160  175550          ECHODJ: MOV     MASK,@TCR       ;SET LINE NO. IN TCR
000400                          #BIT8,@DSR      ;START TRANSMITTER SCANNER
175534                  1$:     @SSR            ;CHECK IF OK
                                BPL     2$              ;BRANCH IF NOT READY
175532                          @#BUF,R4        ;GET CONTENTS OF RBUF
                                SWAB    R4              ;RIGHT JUSTIFY LINE NO.
                                BIC     #177760,R4      ;SAVE ONLY THE LINE NO.
001156                          CMP     R4,LINENO       ;BE SURE IT'S THE LINE UNDER TEST
                                BNE     1$              ;BRANCH IF NOT
                                MOVB    @#BUF,TEMPCH    ;LOAD CHAR TO PRINT
                                MOVB    R0,TEMPCH       ;SAVE CHAR IN TEMPCH
                                RTI                     ;RETURN

                        ;**********
                        ;
                        ;INRDY-- CHECKS IF ANY INPUT FROM TERMINAL UNDER TEST.
                        ;       RETURN VIA PC IF NO CHAR OR VIA PC+2 IF VALID CHAR.  CHAR WILL
                        ;       BE IN BITS 6-0 OF TEMPCH.
                        ;       CALLING SEQUENCE:
                        ;         .INRDY
                        ;         NO CHAR RETURN
                        ;         VALID CHAR RETURN
                        ;
                        ;**********

177560          $INRDY: MOV     @INRCRA,R0      ;GET CHAR
                        BPL     1$              ;BRANCH IF NO CHAR
                        MOVB    R0,TEMPCH       ;SAVE CHAR
                        SWAB    R0              ;RIGHT JUSTIFY LINE NO.
                        BIC     #177760,R0      ;SAVE ONLY LINE NO.
                        CMP     R0,LINENO       ;CHECK IF SAME AS LINE UNDER TEST
                        BNE     $INRDY          ;BRANCH IF NOT LINE UNDER TEST
                        MOVB    @#RBUF,TEMPCH   ;SAVE ONLY THE CHAR
                        ADD     #2,(SP)         ;SET FOR RETURN ADDR.
                1$:     RTS     PC              ;RETURN
```

```
                                        ;***********
                                        ;
                                        ;READ-- THIS ROUTINE READS INPUT FROM THE TERMINAL UNDER TEST ONLY
                                        ;       IF SW13 IS SET. OTHERWISE ALL TERMINALS ARE SCANNED FOR INPUT
                                        ;       AND TERMINAL WHERE CHARACTER IS RECEIVED IS SET AS THE
                                        ;       TERMINAL UNDER TEST.
                                        ;
                                        ;***********
003600  032777  020000  175436  $READ:  BIT     #BIT13,@SR      ;SW13 SET?
003606  001413                          BEQ     1$              ;BRANCH IF NOT
003610  017700  175324                  MOV     @NRCPA,R0       ;GET CHAR
003614  100371                          BPL     $READ           ;NO CHAR, WAIT FOR ONE
003616  010004                          MOV     R0,R4           ;VALID DATA
003620  000304                          SWAB    R4              ;RIGHT JUSTIFY LINE NO.
003622  042704  177760                  BIC     #177760,R4      ;SAVE ONLY LINE NO.
003626  020437  001156                  CMP     R4,LINENO       ;CHECK IF SAME AS LINE UNDER TEST
003632  001362                          BNE     $READ           ;BRANCH IF NOT
003634  000424                          BR      4$              ;CONTINUE
003636  010146                  1$:     MOV     R1,-(SP)        ;SAVE R1
003640  010246                          MOV     R2,-(SP)
003642  010346                          MOV     R3,-(SP)
003644  010446                          MOV     R4,-(SP)
003646  005737  001224                  TST     IOSW            ;DH OR DJ?
003652  001005                          BNE     2$              ;BRANCH IF DJ
003654  004737  002604                  JSR     PC,SCANDH       ;LOOK FOR INPUT
003660  004737  002660                  JSR     PC,SETERM       ;SETUP TERMINAL UNDER TEST
003664  000404                          BR      3$              ;CONTINUE
003666  004737  003016          2$:     JSR     PC,SCANDJ       ;LOOK FOR DJ INPUT
003672  004737  003124                  JSR     PC,SETDJ        ;SETUP DJ UNDER TEST
003676  012604                  3$:     MOV     (SP)+,R4        ;RESTORE REGS
003700  012603                          MOV     (SP)+,R3
003702  012602                          MOV     (SP)+,R2
003704  012601                          MOV     (SP)+,R1
003706  010037  001130          4$:     MOV     R0,PCHAR        ;SAVE CHAR WITH PARITY BIT
003712  113737  001130  001127          MOVB    PCHAR,PARITY+1  ;GET CODE FOR PARITY CHECK
003720  042737  177400  001130          BIC     #177400,PCHAR   ;CLEAR UNWANTED BITS
003726  042700  177600                  BIC     #177600,R0      ;SAVE ONLY THE CHAR
003732  010037  001124                  MOV     R0,TEMPCH
003736  012700  000011                  MOV     #11,R0          ;SET SHIFT COUNT
003742  042737  000377  001126          BIC     #377,PARITY     ;CLEAR PARITY FLAG
003750  005300                  5$:     DEC     R0              ;DECREMENT SHIFT COUNT
003752  001406                          BEQ     6$              ;EXIT IF DONE
003754  106337  001127                  ASLB    PARITY+1        ;ROTATE CODE
003760  103373                          BCC     5$              ;CONTINUE IF CARRY BIT WAS A ZERO
003762  105137  001126                  COMB    PARITY          ;COMPLIMENT PARITY FLAG IF BIT WAS ONE
003766  000770                          BR      5$              ;CONTINUE
003770  013700  001124          6$:     MOV     TEMPCH,R0       ;RESTORE R0
003774  000207                          RTS     PC              ;RETURN
```

H04


```
                                        ;XXXXXXXXXX
                                        ;
                                        ;TYPE-- A COMMON ROUTINE USED TO TYPE MESSAGES ON THE TERMINAL
                                        ;       UNDER TEST ONLY.  THE NULL CHARACTER TERMINATES
                                        ;       THE MESSAGE. CALLED THROUGH AN EMT TRAP.
                                        ;       CALLING SEQUENCE
                                        ;       TYPE
                                        ;       MESG     ;ADDRESS OF MESSAGE
                                        ;
                                        ;XXXXXXXXXX

003776  011601                  TYP:    MOV     @SP,R1          ;GET POINTER TO ADDR. OF MESG.
004000  062716  000002                  ADD     #2,@SP          ;SET UP RETURN ADDRESS
004004  011101                          MOV     @R1,R1          ;ADDR. OF MESG TO R1
004006  112100                  1$:     MOVB    (R1)+,R0        ;GET CHAR
004010  100402                          BMI     2$              ;BRANCH IF WANT AUTO CR-LF
004012  001003                          BNE     3$              ;PRINT CHAR IF NOT NULL
004014  000002                          RTI                     ;EXIT ON NULL CHAR
004016  104003                  2$:     SCRLF                   ;SEND A CRLF
004020  000772                          BR      1$              ;GET NEXT CHAR
004022  104001                  3$:     ECHO                    ;OUTPUT CHAR
004024  000770                          BR      1$              ;GO GET NEXT CHAR

                                        ;XXXXXXXXXX
                                        ;
                                        ;TYPM---MULTI TYPE-A COMMON ROUTINE TO OUTPUT
                                        ;       A MESSAGE ON ALL DH11S.
                                        ;       THIS ROUTINE IS USED BY
                                        ;       THE PRINTER TESTS TO TYPE HEADINGS.
                                        ;       CALLING SEQUENCE:
                                        ;         TYPEM
                                        ;         MESGAD        ;ADDRESS OF MESSAGE
                                        ;
                                        ;XXXXXXXXXX

004026  011601                  TYPM:   MOV     @SP,R1          ;GET POINTER TO ADDR OF MESG
004030  062716  000002                  ADD     #2,@SP          ;SET UP RETURN ADDRESS
004034  011101                          MOV     @R1,R1          ;ADDR OF MESG TO R1
004036  112100                  1$:     MOVB    (R1)+,R0        ;GET CHAR
004040  100402                          BMI     2$              ;BRANCH IF WANT AUTO CR-LF
004042  001003                          BNE     3$              ;CONTINUE IF NOT NULL
004044  000002                          RTI                     ;RETURN TO CALLER
004046  104005                  2$:     CRLF                    ;SEND CR-LF
004050  000772                          BR      1$              ;GET NEXT CHAR
004052  104011                  3$:     PRINTI                  ;PRINT CHAR
004054  000770                          BR      1$              ;GO GET NEXT CHAR.
```

```
                              ;***********
                              ;
                              ;DELAY--A COMMON ROUTINE TO DELAY PROCESSING
                              ;        A GIVEN NUMBER OF MSEC.
                              ;        CALLING SEQUENCE:
                              ;        MOV   #5,R0   ;R0 CONTAINS THE NUMBER OF MSEC DELAY DESIRED
                              ;        DELAY
                              ;
                              ;        THE DELAY IS EFFECTED BY THE EXECUTION OF THE LOOP:
                              ;           1$:  DEC  R1
                              ;                BNE  1$
                              ;
                              ;        SINCE THE EXECUTION TIMES OF THE PDP11 LINE DOES VARY FROM
                              ;        MACHINE TO MACHINE, THE VALUE AT SYMBOLIC LOCATION
                              ;        "TIMER" MUST BE CHANGED TO THE APPROPRIATE VALUE AS SHOWN BELOW
                              ;        BEFORE STARTING THE DIAGNOSTIC. "TIMER" IS INITIALIZED
                              ;         FOR AN PDP-11/40 (TIMER = 554).
                              ;
                              ;MACHINE          05$10   35$40   15$20              11/45 & 11/70
                              ;                                          BIPOLAR       MOS       CORE
                              ;LOOP: DEC R1     3.4     .99     2.3        .30           .51       .90
                              ;      BNE LOOP   2.5     1.76    2.6        .60           .98      1.13
                              ;  TIME=          5.9US   2.75    4.9        .90USEC      1.49USEC            2.03USEC
                              ; SET TIMER       251     554     314        2127          1237      755
                              ;
                              ;XXXXXXXXXX

004056  010146                DLY:    MOV     R1,-(SP)        ;SAVE R1
004060  013701  001102        1$:     MOV     TIMER,R1        ;MOV 1MSEC LOOP CNT TO R1
004064  005301                2$:     DEC     R1              ;DECREMENT COUNT
004066  001376                        BNE     2$              ;BRANCH IF NOT ZERO
004070  005300                        DEC     R0              ;DEC NO. OF MSEC DELAY
004072  001372                        BNE     1$              ;DELAY AGAIN IF NOT ZERO
004074  012601                        MOV     (SP)+,R1        ;ALL DONE RESTORE R1
004076  000002                        RTI
```

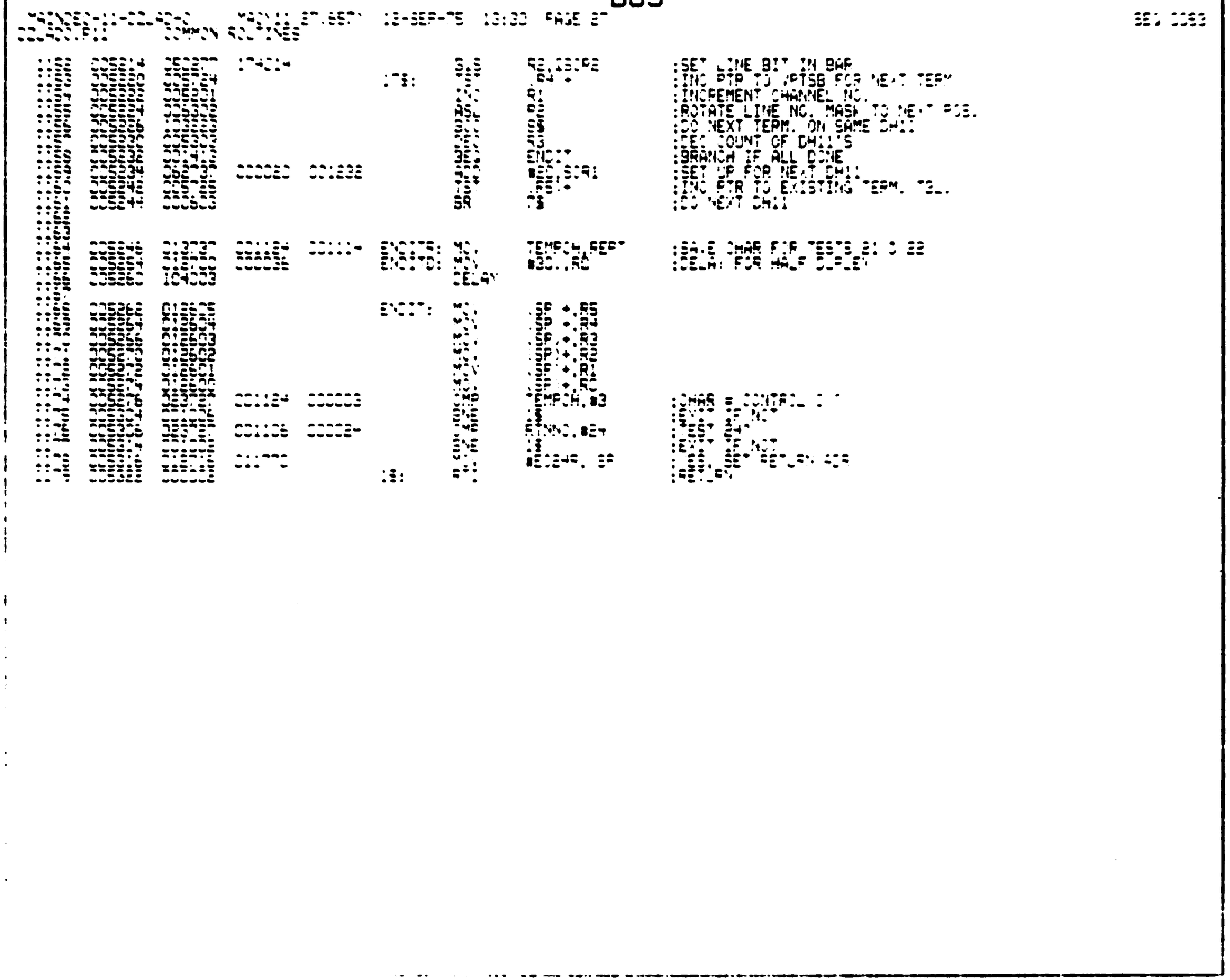
```
                                        ;**********
                                        ;
                                        ;PFAIL--POWER FAIL ROUTINE
                                        ;       SAVE ALL REGISTERS AND SET RESTART ADDRESS
                                        ;       INTO LOCATION 24
                                        ;
                                        ;RESTART--POWER FAIL RECOVERY
                                        ;        RESTORE ALL REGISTERS AND GO TO START
                                        ;
                                        ;**********

004100  010046                  PFAIL:  MOV     R0,-(SP)
004102  010146                          MOV     R1,-(SP)
004104  010246                          MOV     R2,-(SP)
004106  010346                          MOV     R3,-(SP)
004110  010446                          MOV     R4,-(SP)
004112  010546                          MOV     R5,-(SP)
004114  013746  000024                   MOV     24,-(SP)
004120  010637  004134                   MOV     SP,SAVR6        ;SAVE STACK POSITION
004124  012737  004136  000024           MOV     #RESTRT,24      ;STORE RESTART ADDRESS
004132  000000                          HALT

004134  000000                  SAVR6:  .WORD   0

004136  104002                  RESTRT: TYPEM                   ;TYPE POWER MESG
004140  004172                          1$
004142  013706  004134                   MOV     SAVR6,SP        ;RESTORE STACK POINTER
004146  012637  000024                   MOV     (SP)+,24        ;RESTORE PFAIL ADDRESS
004152  012605                          MOV     (SP)+,R5
004154  012604                          MOV     (SP)+,R4
004156  012603                          MOV     (SP)+,R3
004160  012602                          MOV     (SP)+,R2
004162  012601                          MOV     (SP)+,R1
004164  012600                          MOV     (SP)+,R0
004166  000137  001262                   JMP     STARTX

004172  050200  053517  051105  1$:     .ASCIZ  <ACRLF>/POWER/<ACRLF>
004203  000200
                                        .EVEN
```

```
                                        ;**********
                                        ;
                                        ;BINARY TO ASCII CONVERSION (1 TO 5 ASCII CHARACTERS)
                                        ;
                                        ;CALLING SEQUENCE
                                        ;
                                        ;       MOV     ADDRESS OF LOC TO STORE FIRST ASCII CHAR. INTO R0
                                        ;       MOV     BINARY NUMBER TO BE CONVERTED INTO R1
                                        ;       MOV     NUMBER TO BE CONVERTED AS A POWER OF TEN INTO R2
                                        ;       BTOASC
                                        ;
                                        ;**********
004202  010237  004266          $BTASC: MOV     R2,CNVCTR       ;SAVE TEN POWER
004206  006302                          ASL     R2              ;R2*2
004210  062702  004274                  ADD     #ADTENP,R2      ;CALCULATE ADDRESS OF STARTING TEN POWER
004214  014237  004272          1$:     MOV     -(R2),TENPWR    ;POWER OF TEN VALUE TO TENPWR
004220  005037  004270                  CLR     DIGIT           ;CLEAR CURRENT DIGIT
004224  163701  004272          2$:     SUB     TENPWR,R1       ;SUBTRACT TEN POWER FROM BINARY VALUE
004230  103403                          BCS     3$              ;BRANCH IF END
004232  005237  004270                  INC     DIGIT
004236  000772                          BR      2$
004240  063701  004272          3$:     ADD     TENPWR,R1       ;RESTORE SUBTRACTED VALUE
004244  062737  000060  004270          ADD     #60,DIGIT       ;CONVERT (DIGIT) TO ASCII
004252  113720  004270                  MOVB    DIGIT,(R0)+     ;PUT ASCII CHAR INTO USER BUFFER
004256  005337  004266                  DEC     CNVCTR          ;FINISH ALL CHARS CALLED FOR
004262  001354                          BNE     1$              ;BRANCH IF NOT FINISHED
004264  000002                          RTI                     ;RETURN

004266  000000          CNVCTR: .WORD   0               ;CONVERSION CHARACTER COUNT
004270  000000          DIGIT:  .WORD   0               ;CONVERTED CHARACTER
004272  000000          TENPWR: .WORD   0               ;CURRENT TEN POWER

004274  000001  000012  000144  ADTENP: .WORD   1.,10.,100.,1000.,10000.
004302  001750  023420

                                        ;********
                                        ;
                                        ;TESTC-- CHECKS FOR INPUTTED OCTAL DIGIT
                                        ;        BETWEEN A 0 AND A 7 INCLUSIVE
                                        ;
                                        ;********

004306  013700  001124          $TESTC: MOV     TEMPCH,R0       ;GET CHAR
004312  020027  000060                  CMP     R0,#60          ;CHECK IF NUMERIC AND EQ .GT 0
004316  103407                          BLO     1$              ;BRANCH ERROR
004320  020027  000067                  CMP     R0,#67          ;CHECK IF EQ OR LT 7
004324  101004                          BHI     1$              ;BRANCH ERROR
004326  062716  000002                  ADD     #2,@SP          ;SET UP RETURN ADDRESS
004332  042700  177770                  BIC     #177770,R0      ;SAVE ONLY THE DIGIT
004336  000002          1$:     RTI                     ;NORMAL RETURN
```

```
                                        ;**********
                                        ;
                                        ;SCRLF-- A COMMON ROUTINE TO OUTPUT A CR AND LF TO
                                        ;       THE TEST TERMINAL ONLY.
                                        ;
                                        ;**********
004340  112700  000015          $SCRLF: MOVB    #15,R0          ;SEND A CR
004344  104021                          ECHO                    ;WAIT UNTIL PRINTER IS READY
004346  112700  000012                  MOVB    #12,R0          ;SEND A LF
004352  104021                          ECHO
004354  000002                          RTI                     ;RETURN TO CALLER


                                        ;XXXXXXXXXX
                                        ;
                                        ;CRLF-- ROUTINES TO SEND A CR AND/OR LF TO ALL TERMINALS.
                                        ;
                                        ;XXXXXXXXXX
004356  104014                  $CRLF:  CR                      ;SEND CR
004360  012700  000012          $LF:    MOV     #12,R0          ;LF TO R0
004364  104011                          PRINTC                  ;SEND IT
004366  000002                          RTI                     ;RETURN

004370  012700  000015          $CR:    MOV     #15,R0          ;CR TO R0
004374  104011                          PRINTC                  ;SEND IT
004376  000002                          RTI                     ;RETURN


                                        ;********
                                        ;
                                        ;ROUTINE TO PRINT TEST HEADER
                                        ;
                                        ;********
004400  104002                  $PRHDR: TYPEM                   ;PRINT MESG
004402  017033                          HDRMSG
004404  013700  001106                  MOV     RTNNO,R0        ;GET TEST NUMBER
004410  006200                          ASR     R0              ;GET FIRST DIGIT
004412  006200                          ASR     R0
004414  006200                          ASR     R0
004416  042700  177770                  BIC     #177770,R0      ;MASK FIRST DIGIT
004422  062700  000060                  ADD     #60,R0          ;MAKE ASCII
004426  104011                          PRINTC                  ;PRINT IT
004430  013700  001106                  MOV     RTNNO,R0        ;GET TEST NUMBER AGAIN
004434  042700  177770                  BIC     #177770,R0      ;MASK LAST DIGIT
004440  062700  000060                  ADD     #60,R0          ;MAKE ASCII
004444  104011                          PRINTC                  ;PRINT IT
004446  104006                          CRLF                    ;CR-LF
004450  104010                          LF                      ;BLANK LINE
004452  000002                          RTI                     ;RETURN
```

```
 1044                                   ;**********
 1045                                   ;
 1046                                   ;PRINTC--THIS ROUTINE IS USED TO DRIVE EACH OF THE EXISTING TERMINALS
 1047                                   ;       ON EACH OF THE EXISTING DH11'S( AS DEFINED BY THE SET UP IN ELTAB).
 1048                                   ;       IF IN THE MAINTENANCE MODE SR BIT 13 CONTROLS WHETHER OR NOT
 1049                                   ;       ALL DH11'S ARE DRIVEN OR ONLY THE TERMINAL UNDER TEST.  SET
 1050                                   ;       BIT 13 DOWN TO DRIVE ALL TERMINALS ON ALL DH11'S. SET BIT 13 UP TO
 1051                                   ;       DRIVE ONLY THE TERMINAL UNDER TEST.
 1052                                   ;       EACH TERMINAL IS DRIVEN ONE CHARACTER AT A TIME.
 1053                                   ;       PRINTC WILL LOOP WAITING FOR THE FIRST TERMINAL TO BE READY
 1054                                   ;       ENTER WITH CHAR TO PRINT IN R0.
 1055                                   ;
 1056                                   ;**********
 1057
 1058  004454  010046                   $PRTC:  MOV     R0,-(SP)        ;SAVE R0
 1059  004456  010146                           MOV     R1,-(SP)        ;SAVE R1
 1060  004460  010246                           MOV     R2,-(SP)        ;SAVE R2
 1061  004462  010346                           MOV     R3,-(SP)        ;SAVE R3
 1062  004464  010446                           MOV     R4,-(SP)        ;SAVE R4
 1063  004466  010546                           MOV     R5,-(SP)        ;SAVE R5
 1064  004470  005737  001224                   TST     IOSW            ;DH11 OR DJ11?
 1065  004474  001402                           BEQ     1$
 1066  004476  000137  005324                   JMP     PRINTJ          ;GO TO DJ11 ROUTINE
 1067  004502  005737  001230           1$:     TST     DHCNT           ;ANY DH11'S PRESENT?
 1068  004506  001562                           BEQ     12$             ;RETURN IF NONE
 1069  004510  032777  020000  174526           BIT     #BIT13,@SR      ;CHECK IF SR BIT13 IS SET
 1070  004516  001445                           BEQ     6$              ;DRIVE ALL TERMINALS IF NOT SET
 1071  004520  104021                           ECHO                    ;OUTPUT CHAR
 1072  004522  104022                           INRDY                   ;CHECK IF ANY INPUT
 1073  004524  000440                           BR      18$             ;NO,RETURN
 1074  004526  023727  001124  000177           CMP     TEMPCH,#177     ;INPUT,CHECK IF A RUBOUT
 1075  004534  001402                           BEQ     2$
 1076  004536  000137  005246                   JMP     ENDITR          ;NO RUBOUT, RETURN
 1077  004542  023727  001106  000024   2$:     CMP     RTNNO,#24       ;CHECK IF TEST 24
 1078  004550  001004                           BNE     3$              ;BRANCH IF NOT
 1079  004552  012766  012054  000014           MOV     #TERM,14(SP)    ;SET RETURN ADR
 1080  004560  000535                           BR      12$             ;RETURN TO EXIT TEST PROPERLY
 1081  004562  023727  001106  000021   3$:     CMP     RTNNO,#21       ;TEST 21?
 1082  004570  001004                           BNE     4$              ;BRANCH IF NOT
 1083  004572  012766  011064  000014           MOV     #E021B,14(SP)   ;SET RETURN TO EXIT TEST PROPERLY
 1084  004600  000525                           BR      12$             ;RETURN
 1085  004602  023727  001106  000022   4$:     CMP     RTNNO,#22       ;TEST 22?
 1086  004610  001004                           BNE     5$              ;CONTINUE IF NOT
 1087  004612  012766  011144  000014           MOV     #E022B,14(SP)   ;SET RETURN ADR
 1088  004620  000515                           BR      12$             ;RETURN TO EXIT TEST PROPERLY
 1089  004622  000137  002450           5$:     JMP     TTY1H           ;GO WAIT
 1090  004626  000137  005262           18$:    JMP     ENDIT
 1091  004632  013737  001134  001232   6$:     MOV     DHADR,SCR1      ;INIT ADDR OF FIRST DH11
 1092  004640  012705  016560                   MOV     #ELTAB,R5       ;INIT ADDR TO EXISTING TERM TAB
 1093  004644  012704  015560                   MOV     #DH1100,R4      ;INIT ADDR TO VP TAB
 1094  004650  013703  001230                   MOV     DHCNT,R3        ;INIT DH11 COUNT
 1095  004654  012702  000001           7$:     MOV     #1,R2           ;INIT CURRENT LINE NO.
 1096  004660  005001                           CLR     R1              ;SET UP CURRENT CHANNEL NUMBER
 1097  004662  013737  001232  001234           MOV     SCR1,SCR2       ;SET SCR2 = ADDR OF CURRENT DH11
```

```
1098  004670  062737  000012  001234          ADD     #12,SCR2        ;SET SCR2 = ADDR OF BAR
1099  004676  031502                  8$:     BIT     @R5,R2          ;TEST IF TERMINAL EXISTS
1100  004700  001147                          BNE     17$             ;BRANCH IF NO TERMINAL
1101  004702  037702  174326          9$:     BIT     @SCR2,R2        ;TEST IF OK TO SEND
1102  004706  001375                          BNE     9$              ;TEST AGAIN
1103  004710  062737  000004  001234          ADD     #4,SCR2         ;ADDR OF SILO STATUS
1104  004716  112777  000020  174310          MOVB    #20,@SCR2       ;SET SILO OVERFLOW TC 16
1105  004724  162737  000016  001234          SUB     #16,SCR2        ;SET SCR2 AS ADDR OF SCR
1106  004732  110177  174276                  MOVB    R1,@SCR2        ;PUT CHANNEL NO. INTO SCR
1107  004736  062737  000002  001234          ADD     #2,SCR2         ;SET CHAR BUF ADR
1108  004744  005777  174264                  TST     @SCR2           ;ANY INPUT?
1109  004750  100064                          BPL     16$             ;CONTINUE IF NONE
1110  004752  017737  174256  001124          MOV     @SCR2,TEMPCH    ;GET CHAR
1111  004760  042737  177600  001124          BIC     #177600,TEMPCH  ;MASK CHAR
1112  004766  023727  001124  000177          CMP     TEMPCH,#177     ;CHECK IF RUBOUT
1113  004774  001032                          BNE     14$             ;BRANCH IF NOT RUBOUT
1114  004776  023727  001106  000024          CMP     RTNNO,#24       ;TEST 24?
1115  005004  001004                          BNE     10$             ;BRANCH IF NOT
1116  005006  012766  012054  000014          MOV     #TERM,14(SP)    ;SET RETURN ADR
1117  005014  000517                          BR      ENDITD          ;RETURN TO EXIT TEST PROPERLY
1118  005016  023727  001106  000021  10$:     CMP     RTNNO,#21       ;TEST21?
1119  005024  001004                          BNE     11$             ;BRANCH IF NOT
1120  005026  012766  011064  000014          MOV     #E021B,14(SP)   ;SET RETURN ADR
1121  005034  000507                          BR      ENDITD          ;RETURN TO EXIT TEST PROPERLY
1122  005036  023727  001106  000022  11$:     CMP     RTNNO,#22       ;TEST 22?
1123  005044  001004                          BNE     13$             ;BRANCH IF NOT
1124  005046  012766  011144  000014          MOV     #E022B,14(SP)   ;SET RETURN ADR
1125  005054  000477                  12$:    BR      ENDITD          ;RETURN TO EXIT TEST PROPERLY
1126  005056  000137  002450          13$:    JMP     TTY1H           ;CONTROL
1127  005062  023727  001124  000003  14$:     CMP     TEMPCH,#3       ;CHAR = CONTROL-C ?
1128  005070  001004                          BNE     15$             ;CONTINUE IF NOT
1129  005072  023727  001106  000024          CMP     RTNNO,#24       ;TEST 24?
1130  005100  001465                          BEQ     ENDITD          ;EXIT IF TEST 24
1131  005102  013737  001124  001114  15$:     MOV     TEMPCH,REPT     ;SAVE CHAR FOR TESTS 21 AND 22
1132  005110  010046                          MOV     R0,-(SP)        ;SAVE R0
1133  005112  012700  000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
1134  005116  104003                          DELAY
1135  005120  012600                          MOV     (SP)+,R0        ;RESTORE R0
1136  005122  062737  000002  001234  16$:     ADD     #2,SCR2         ;SCR2 EQ ADDR OF LPR
1137  005130  011477  174100                  MOV     (R4),@SCR2      ;STORE VP INTO LPR
1138  005134  062737  000002  001234          ADD     #2,SCR2         ;ADD 2 TO ADDDR IN SCR2
1139  005142  010146                          MOV     R1,-(SP)        ;SAVE R1
1140  005144  006301                          ASL     R1              ;FIND TABLE POINTER
1141  005146  006301                          ASL     R1              ;TO STORE CHAR
1142  005150  006301                          ASL     R1              ;FOR THIS CHANNEL
1143  005152  006301                          ASL     R1
1144  005154  060301                          ADD     R3,R1
1145  005156  062701  006007                  ADD     #CHARAC-1,R1
1146  005162  110011                          MOVB    R0,(R1)         ;STORE CHAR
1147  005164  010177  174044                  MOV     R1,@SCR2        ;ADDR OF CHAR INTO CAPA
1148  005170  012601                          MOV     (SP)+,R1        ;RESTORE R1
1149  005172  062737  000002  001234          ADD     #2,SCR2         ;ADD 2 TO ADDR IN SCR2
1150  005200  012777  177777  174026          MOV     #177777,@SCR2   ;SET CHAR COUNT EQ 1
1151  005206  062737  000002  001234          ADD     #2,SCR2         ;ADD 2 TO ADDR IN SCR2
```



```
                                        ;***********
                                        ;
                                        ;PRINTJ--THIS ROUTINE IS USED TO DRIVE EACH OF THE EXISTING TERMINALS
                                        ;       ON EACH OF THE EXISTING DJ11S' (AS DEFINED BY THE SET UP IN
                                        ;       "ELTAB" . IF IN THE MAINTENANCE MODE, SR BIT 13 CONTROLS
                                        ;       WHETHER OR NOT ALL DJ11S' ARE DRIVEN OR ONLY THE TERMINAL
                                        ;       UNDER TEST. EACH TERMINAL IS DRIVEN ONE AT A TIME. PRINTJ
                                        ;       WILL LOOP WAITING FOR THE FIRST ONE TO BE READY TO SEND
                                        ;       ENTER WITH CHARACTER TO SEND IN R0.
                                        ;
                                        ;***********
[illegible] 005737 001226               PRINTJ: TST     DJCNT           ;ANY DJ11S'
[illegible] [illegible]                         BEQ     ENDIT           ;NO, RETURN
[illegible] [illegible] 020000 177570           BIT     #BIT13,@SR      ;CHECK IF SR 13 IS SET
[illegible] 001441                              BEQ     4$              ;CLEAR, DRIVE ALL TERMINALS
[illegible] 104001                              ECHO                    ;OUTPUT CHAR TO TERM UNDER TEST
[illegible] 104000                              INRDY                   ;CHECK IF ANY INPUT
005346  000745                                  BR      ENDIT           ;NO, RETURN
005350  023727 001124 000177                    CMP     TEMPCH,#177     ;YES CHECK IF A RUBOUT
005356  001333                                  BNE     ENDITR          ;NO, RETURN
005360  023727 001126 000024                    CMP     RTNNO,#24       ;TEST 24?
005366  001004                                  BNE     1$              ;BRANCH IF NOT
005370  012766 012054 000014                    MOV     #TERM,14(SP     ;SET RETURN ADR
005376  000726                                  BR      ENDITC          ;RETURN TO EXIT TEST PROPERLY
005400  023727 001126 000021    1$:             CMP     RTNNO,#21       ;TEST 21?
005406  001004                                  BNE     2$              ;BRANCH IF NOT
[illegible] 012766 011064 000014                MOV     #EC21S,14(SP    ;SET RETURN ADR
[illegible] [illegible]                         BR      ENDITC          ;RETURN TO EXIT TEST PROPERLY
[illegible] 023727 001126 000022    2$:         CMP     RTNNO,#22       ;TEST 22?
005426  001004                                  BNE     3$              ;BRANCH IF NOT
[illegible] 012766 011144 000014                MOV     #EC222,14(SP)   ;SET RETURN ADR
005436  000706                                  BR      ENDITC          ;RETURN TO EXIT TEST PROPERLY
[illegible] 000137 002450           3$:         JMP     TTYIN           ;GO WAIT
[illegible] 012737 160010 001232    4$:         MOV     #160010,SCR1    ;INIT ADDR OF FIRST DJ11
[illegible] 012705 015550           MOV         #ELTAB,R5       ;INIT ADDR OF EXISTING TERM TAB
[illegible] [illegible] 001226                  MOV     DJCNT,R3        ;COUNT OF DJ11S' TO R3
[illegible] [illegible] 000001      5$:         MOV     #1,R2           ;INIT CURRENT LINE NO.
[illegible] [illegible]                         CLR     R1              ;INIT CURRENT CHANNEL NO.
[illegible] [illegible] 001232 001234  6$:      MOV     SCR1,SCR2       ;SET SCR2=ADDR OF CURRENT DJ11
[illegible] 062737 000004 001234                ADD     #4,SCR2         ;SCR2 IS ADDR OF TCR
[illegible] 031502                              BIT     @R5,R2          ;TEST IF TERMINAL EXISTS
[illegible] 001124                              BNE     15$             ;BRANCH IF NO TERMINAL
[illegible] 010277 173520                       MOV     R2,@SCR2        ;YES,SET LINE NO. IN TCR
[illegible] 162737 000004 001234                SUB     #4,SCR2         ;SCR2 IS NOW ADDR OF CSR
[illegible] 105777 173506                       TSTB    @SCR2           ;CHECK FOR INPUTS
[illegible] [illegible]                         BPL     13$             ;CONTINUE IF NO INPUT
[illegible] [illegible] [illegible] [illegible]         ADD     #2,SCR2         ;SET CHAR BUF REG ADR
[illegible] [illegible] [illegible] [illegible]         MOV     @SCR2,TEMPCH    ;GET INPUT CHAR
[illegible] [illegible] [illegible] [illegible]         BIC     #177600,TEMPCH  ;MASK CHAR
[illegible] [illegible] [illegible] [illegible]         CMP     TEMPCH,#177     ;CHECK CHAR
[illegible] [illegible]                         BNE     11$             ;BRANCH IF NOT RUBOUT
[illegible] [illegible] 001126 000024           CMP     RTNNO,#24       ;TEST 24?
[illegible] [illegible]                         BNE     7$              ;BRANCH IF NOT
```

```
        012264  000014          MOV     #TERM,14(SP)    ;SET RETURN ADR
                                BR      ENDITC          ;RETURN TO EXIT TEST PROPERL
        001126  000021  7$:     CMPB    RTNNO,#21       ;TEST 21?
                                BNE     9$              ;BRANCH IF NOT
        011264  000014          MOV     #EC21B,14(SP)   ;SET RETURN ADR
                                BR      ENDITC          ;RETURN TO EXIT TEST PROPERL
        001126  000022  8$:     CMPB    RTNNO,#22       ;TEST 22?
                                BNE     10$             ;BRANCH IF NOT
        011144  000014          MOV     #EC223,14(SP)   ;SET RETURN ADR
                        9$:     BR      ENDITC          ;RETURN TO EXIT TEST PROPERL
        002450          10$:    [illegible]             ;GO TO CONTROL
        001124  000003  11$:    CMPB    TEMPCH,#3       ;CHAR = CONTROL-C ?
                                BNE     12$             ;BRANCH IF NOT
        001126  000024          CMPB    RTNNO,#24       ;TEST 24?
                                BEQ     9$              ;YES, RETURN TO TEST
        001124  001114  12$:    MOVB    TEMPCH,[illegible] ;SAVE CHAR FOR TESTS 21 & 22
                                MOV     R0,-(SP)        ;SAVE R0
        000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
                                [illegible] DELAY
                                MOV     (SP)+,R0        ;RESTORE R0
        [illegible] [illegible] MOV  #[illegible],R0   ;RESET PROPER ADR FOR PRINT
        [illegible] [illegible] 13$: BIS #[illegible],[illegible] ;START TRANSMITTER SCANNER
        [illegible]     14$:    TSTB    [illegible]     ;CHECK STATE OF CSR
                                BPL     14$             ;BRANCH IF XMITTER NOT READ
        [illegible] [illegible] MOV  #[illegible]      ;READY, SCR2 NOW=ADDR OF TBUF
        [illegible]             MOV     [illegible],R4  ;GET CONTENTS OF TBUF
        [illegible]             [illegible]
        177760                  BIC     #177760,R4      ;SAVE ONLY LINE NO.
                                [illegible]             ;BE SURE SCANNER IS ON CORRECT LINE
                                BNE     [illegible]     ;BRANCH IF NOT, TRY AGAIN
        177[illegible]          MOVB    [illegible]     ;LOAD TBUF WITH CHAR
                        15$:    [illegible]             ;INCREMENT LINE NO.
                                [illegible]             ;SET LINE NO. TO NEXT POSITION
                                [illegible]             ;IF CARRY [illegible]
                                [illegible]             ;[illegible] COUNT OF [illegible]
                                [illegible]             ;BRANCH IF NOT DONE
                                [illegible]             ;[illegible]
        [illegible]     001232  16$:   [illegible]      ;[illegible]
                                [illegible]             ;[illegible]
                                [illegible]             ;[illegible]
                                [illegible]             ;GO TO NEXT [illegible]

        [illegible]             CHARAC: .BLKB  256.     ;CHARACTER STORAGE FOR OUTPUT
```

E05


```
                                        .SBTTL  PRINTER TESTS

                                ;XXXXXXXXXXXX
                                ;
                                ;PT0 -- DATA PATH TEST---FOUR LINES OF ALTERNATING
                                ;       "*" AND "U" ARE PRINTED, OUT TO THE GIVEN PAPER
                                ;       WIDTH THE PATTERN WILL APPEAR AS FOLOWS.
                                ;
                                ;       *U*U*U*U*U*U
                                ;       U*U*U*U*U*U*
                                ;       *U*U*U*U*U*U
                                ;       U*U*U*U*U*U*
                                ;
                                ;XXXXXXXXXXXX
        006410  000000          PT0:    0                       ;TEST NUMBER
        006412  006454                  PT1                     ;NEXT TEST
        006414  104012                  PRTHDR                  ;PRINT TEST HEADER
        006416  104006                  TYPEM                   ;PRINT COLUMN MESG
        006420  [illegible]             HORZ
        006422  012703  025125  1$:     MOV     #"U*,R3         ;SET FIRST CHAR PAIR
        006426  012702  000020          MOV     #16.,R2         ;SET LINE COUNT
        006432  010300          2$:     MOV     R3,R0           ;SET CHAR PAIR
        006434  016701  001112          MOV     WIDTH,R1        ;SET COLUMN COUNT
        006440  104011          3$:     PRINTC                  ;PRINT CHAR
        006442  000300                  SWAB    R0              ;SET NEXT CHAR
        006444  005301                  DEC     R1              ;DEC COLUMN COUNT
        006446  001374                  BNE     3$              ;FINISH LINE
        006450  000303                  SWAB    R3              ;SET NEXT START CHAR
        006452  [illegible]             CRLF                    ;CR-LF
        006454  005302                  DEC     R2              ;DEC LINE COUNT
        006456  [illegible]             BNE     2$              ;FINISH TEST
        006460  [illegible]             [illegible]             ;ALL DONE, EXIT
        006462  [illegible]             BR      1$              ;REPEAT TEST
```

```
                                  ;XXXXXXXXXX
                                  ;
                                  ;PT1 -- PRINTER CHARACTER TEST --- PRINTS ALL PRINTABLE CHARACTERS
                                  ;
                                  ;XXXXXXXXXX

006464  000001                    PT1:    1                              ;TEST NUMBER
006466  006606                            PT2                            ;NEXT TEST
006470  104012                            PRTHDR                         ;PRINT TEST HEADER
006472  012701  000040            1$:     MOV     #40,R1                 ;SPACE TO R1
006476  012702  000100                    MOV     #100,R2                ;@ TO R2
006502  012703  000140                    MOV     #140,R3                ;` TO R3
006506  010100                    2$:     MOV     R1,R0                  ;FIRST CHAR TO R0
006510  004737  006556                    JSR     PC,SPSP                ;SEND TWO SPACES
006514  010200                            MOV     R2,R0                  ;SECOND CHAR TO R0
006516  004737  006556                    JSR     PC,SPSP                ;SEND TWO SPACES
006522  012704  000003                    MOV     #3,R4                  ;CHAR COUNT TO R4
006526  010300                            MOV     R3,R0                  ;THIRD CHAR TO R0
006530  104011                    3$:     PRINTC                         ;PRINT CHAR
006532  005304                            DEC     R4                     ;THREE TIMES ?
006534  001375                            BNE     3$                     ;BRANCH IF NOT
006536  104006                            CRLF                           ;CR-LF
006540  122122                            CMPB    (R1)+,(R2)+            ;SET NEXT CHARS
006542  105723                            TSTB    (R3)+
006544  020327  000200                    CMP     R3,#200                ;CHECK IF ALL DONE
006550  103756                            BLO     2$                     ;BRANCH IF NOT
006552  104001                            CHAIN                          ;EXIT TO NEXT TEST
006554  000746                            BR      1$                     ;REPEAT TEST

006556  012704  000003            SPSP:   MOV     #3,R4                  ;SET PRINT COUNT
006562  104011                    1$:     PRINTC                         ;PRINT CHAR
006564  005304                            DEC     R4                     ;DEC PRINT COUNT
006566  001375                            BNE     1$                     ;FINISH CHAR

006570  012700  000040            SP2:    MOV     #40,R0                 ;SPACE TO R0
006574  104011                            PRINTC                         ;PRINT FIRST SPACE

006576  012700  000040            SP1:    MOV     #40,R0                 ;SPACE TO R0
[illegible] [illegible]                   PRINTC                         ;PRINT SECOND SPACE
[illegible] [illegible]                   RTS     PC                     ;RETURN
```

G05

```
MAINDEC-11-DZLAD-C     MACY11 27(567)  12-SEP-75  13:30  PAGE 32                                               SEQ 0058
DZLADC.P11        PRINTER TESTS

1354                                          ;XXXXXXXXXX
1355                                          ;
1356                                          ;PT2 -- NON-PRINTING CHARACTER TEST.  THIS TEST
1357                                          ;       PRINTS THE OCTAL CODE FOLLOWED BY THE MNEMONIC
1358                                          ;       OF ALL NON-PRINTING CHARACTERS.  FOLLOWING EACH
1359                                          ;       MNEMONIC, THE PRINTER IS DRIVEN BY THE NON-PRINTING
1360                                          ;       CODE (000 THROUGH 037 PLUS 177).  ALL CONTROL CHARACTERS
1361                                          ;       (INCLUDING THOSE FOR OPTIONS) WILL BE SKIPPED.
1362                                          ;       REFER TO THE DOCUMENT FOR A LIST OF THOSE PRINTED.
1363                                          ;
1364                                          ;XXXXXXXXXX
1365
1366   006606  000002                         PT2:    2                         ;TEST NUMBER
1367   006610  007236                                 PT3                       ;NEXT TEST
1368   006612  104012                                 PRTHDR                    ;PRINT TEST HEADER
1369   006614  005003                         1$:     CLR     R3                ;NON-PRINTABLE CHAR..NULL IS FIRST
1370   006616  012701  006774                         MOV     #LINE2,R1         ;ADDR OF CHAR STRING TO R1
1371   006622  012702  000003                 2$:     MOV     #3,R2             ;NO. OF CHAR GROUPS PER LINE
1372   006626  012704  000010                 3$:     MOV     #10,R4            ;NO. OF CHARS PER GROUP
1373   006632  112100                         4$:     MOVB    (R1)+,R0          ;CHAR INTO R0
1374   006634  104011                                 PRINTC                    ;PRINT CHAR
1375   006636  005304                                 DEC     R4                ;8 CHARS. PRINTED?
1376   006640  001374                                 BNE     4$                ;BRANCH IF NOT
1377   006642  022703  000002                         CMP     #2,R3             ;CHAR = STX?
1378   006646  001420                                 BEQ     7$                ;YES, SET NEXT CHAR
1379   006650  022703  000004                         CMP     #4,R3             ;CHAR = EOT?
1380   006654  001414                                 BEQ     6$                ;YES, SET NEXT CHAR
1381   006656  022703  000033                         CMP     #33,R3            ;CHAR = ESC?
1382   006662  001412                                 BEQ     7$                ;YES, SET NEXT CHAR
1383   006664  022703  000007                         CMP     #7,R3             ;CHAR = BELL?
1384   006670  001002                                 BNE     5$                ;BRANCH IF NOT A BELL
1385   006672  012703  000020                         MOV     #20,R3            ;SET NEXT CHAR
1386   006676  022703  000040                 5$:     CMP     #40,R3            ;IS IT THE LAST?
1387   006702  001003                                 BNE     8$                ;BRANCH IF NO
1388   006704  000421                                 BR      11$               ;YES, OUTPUT LAST CHAR (177)
1389   006706  005203                         6$:     INC     R3                ;SKIP CHAR
1390   006710  005203                         7$:     INC     R3                ;SKIP CHAR
1391   006712  010300                         8$:     MOV     R3,R0             ;NON-PRINTABLE CHAR TO R0
1392   006714  012704  000003                         MOV     #3,R4             ;A COUNT OF 3 TO R4
1393   006720  104011                         9$:     PRINTC                    ;DRIVE PRINTER WITH NON-PRINTABLE CHAR
1394   006722  005304                                 DEC     R4                ;DECREMENT COUNTER
1395   006724  001375                                 BNE     9$                ;BRANCH IF NOT ZERO (3 TIMES)
1396   006726  005203                                 INC     R3                ;INCREMENT CHAR.CODE
1397   006730  005302                                 DEC     R2                ;DEC. GROUPS PER LINE COUNTER (3)
1398   006732  001404                                 BEQ     10$               ;BRANCH IF ZERO
1399   006734  004737  006570                         JSR     PC,SP3            ;SEND 3 SPACES
1400   006740  104011                                 PRINTC
1401   006742  000731                                 BR      3$                ;CONTINUE
1402   006744  104006                         10$:    CRLF                      ;SEND A CR,LF
1403   006746  000725                                 BR      2$                ;GO DO NEXT LINE
1404   006750  012704  000003                 11$:    MOV     #3,R4             ;A 3 COUNT TO R4
1405   006754  012700  000177                         MOV     #177,R0           ;A DEL TO R0
1406   006760  104011                         12$:    PRINTC                    ;PRINT CHAR
1407   006762  005304                                 DEC     R4                ;DECREMENT COUNTER
```

```
006764  001375                                  BNE     12$             ;BRANCH IF NOT ZERO
006766  104006                                  CRLF                    ;SEND A CR, LF
006770  104001                                  CHAIN                   ;CHAIN TO NEXT TEST
006772  000710                                  BR      1$              ;REPEAT TEST

006774  030060  020060  047040  LINE2:  .ASCII  000 NUL001 SOH002 STX
007002  046125  030063  020061
007010  051440  044117  030060
007016  020062  051440  054124
007024  030060  020066  040440          .ASCII  006 ACK020 DLE021 DC1
007032  045503  031060  020060
007040  042040  042514  031060
007046  020061  042040  030503
007054  031060  020062  042040          .ASCII  022 DC2023 DC3024 DC4
007062  031103  031060  020063
007070  042040  031503  031060
007076  020064  042040  032103
007104  031060  020065  047040          .ASCII  025 NAK026 SYN027 ETB
007112  045501  031060  020066
007120  051440  047131  031060
007126  020067  042440  041124
007134  031460  020060  041440          .ASCII  030 CAN031 EM 032 SUB
007142  047101  031460  020061
007150  042440  020115  031460
007156  020062  051440  041125
007164  031460  020064  043040          .ASCII  034 FS 035 GS 036 RS
007172  020123  031460  020065
007200  043440  020123  031460
007206  020066  051040  020123
007214  031460  020067  052440          .ASCII  037 US 177 DEL
007222  020123  033461  020067
007230  042040  046105     040
        007236                                  .EVEN
```

```
                                          ;XXXXXXXXXX
                                          ;
                                          ;PT3 --  CARRIAGE RETURN TEST --
                                          ;        THE LINE CONSISTS OF A STRING OF 0'S AND
                                          ;        X'S.  FIRST, THE 0'S ARE PRINTED OUT TO THE LAST
                                          ;        COLUMN WITH A SPACE SEPARATING EACH.  THEN THE
                                          ;        CARRIAGE IS SPACED TO THE FIRST BLANK SPACE, AND X
                                          ;        PRINTED AND THE RETURNED TO THE MARGIN.  THIS
                                          ;        PROCESS IS CONTINUE UNTIL ALL SPACES BETWEEN
                                          ;        THE ZEROES HAVE BEEN FILLED.
                                          ;
                                          ;XXXXXXXXXX

007236  000003                            PT3:    3                               ;TEST NUMBER
007240  007356                                    PT4                             ;NEXT TEST
007242  104012                                    PRTHDR                          ;PRINT TEST HEADER
007244  005037  001116                    1$:     CLR     SPCNT                   ;CLEAR SPACE COUNTER
007250  013701  001112                            MOV     WIDTH,R1                ;POSITION COUNTER TO R1
007254  012700  000117                    2$:     MOV     #117,R0                 ;"0" TO R0
007260  104011                                    PRINTC                          ;PRINT THE "0"
007262  005301                                    DEC     R1                      ;DECREMENT POSITION COUNTER
007264  001404                                    BEQ     3$                      ;BRANCH IF 0
007266  004737  006576                            JSR     PC,SPC                  ;PRINT A SPACE
007272  005301                                    DEC     R1                      ;DECREMENT POSITION COUNTER
007274  001367                                    BNE     2$                      ;BRANCH IF NOT ZERO
007276  104014                            3$:     CR                              ;SEND CR
007300  012737  000001  001116                    MOV     #1,SPCNT                ;SPACE, COUNTER SET TO 1
007306  013701  001116                    4$:     MOV     SPCNT,R1                ;NO. OF SPACES TO R1
007312  004737  006576                    5$:     JSR     PC,SPC                  ;PRINT SPACE
007316  005301                                    DEC     R1                      ;DECREMENT SPACE COUNTER
007320  001374                                    BNE     5$                      ;BRANCH IF NOT ZERO
007322  012700  000130                            MOV     #130,R0                 ;"X" INTO R0
007326  104011                                    PRINTC                          ;PRINT "X"
007330  104014                                    CR                              ;SEND CR
007332  062737  000002  001116                    ADD     #2,SPCNT                ;INCREMENT SPACE COUNT BY 2
007340  023737  001116  001112                    CMP     SPCNT,WIDTH             ;COMPARE POSITION COUNTER WITH COLM. COUNT
007346  103757                                    BLO     4$                      ;BRANCH IF LOWER
007350  104010                                    LF                              ;SEND LF
007352  104001                                    CHAIN                           ;CHAIN TO NEXT TEST
007354  000733                                    BR      1$                      ;REPEAT TEST
```

```
                                          ;XXXXXXXXXX
                                          ;
                                          ;PT4 -- MULTIPLE LINE FEED TEST -- 63 LINE FEEDS ARE
                                          ;       SENT WITH A REFERENCE LINE AT THE START AND END.
                                          ;       A NUMBER IS PRINTED WHICH INDICATES THE NUMBER OF LINE
                                          ;       FEEDS THAT WILL BE ISSUED BEFORE THE NEXT
                                          ;       NUMBER CR REFERENCE LINE IS PRINTED.
                                          ;
                                          ;XXXXXXXXXX

007356  000004                            PT4:    4                         ;TEST NUMBER
007360  007534                                    PT5                       ;NEXT TEST
007362  104012                                    PRTHDR                    ;PRINT TEST HEADER
007364  012737  000001  001132            1$:     MOV     #1,LFCNT          ;LINE FEED COUNT TO 1
007372  013701  001112                            MOV     WIDTH,R1          ;COLUMN COUNT TO R1
007376  012702  007516                            MOV     #LINE3,R2         ;ADDR OF NUMBER FIELD TO R2
007402  004737  007466                            JSR     PC,REF            ;PRINT REFERENCE LINE
007406  013701  001132                    2$:     MOV     LFCNT,R1          ;LINE FEED COUNT TO R1
007412  104010                            3$:     LF                        ;SEND LF
007414  005301                                    DEC     R1                ;DECREMENT COUNTER
007416  001375                                    BNE     3$                ;BRANCH IF NOT YET 0
007420  006337  001132                            ASL     LFCNT             ;DOUBLE LINE FEED COUNT
007424  022737  000100  001132                    CMP     #BIT6,LFCNT       ;TEST IF COUNT IS 32
007432  001406                                    BEQ     4$                ;BRANCH IF =32. END
007434  112200                                    MOVB    (R2)+,R0          ;NUMBER TO R0
007436  104011                                    PRINTC                    ;PRINT IT
007440  112200                                    MOVB    (R2)+,R0          ;NUMBER TO R0
007442  104011                                    PRINTC                    ;PRINT IT
007444  104014                                    CR                        ;SEND CR
007446  000757                                    BR      2$                ;DRIVE THE LINEFEEDS
007450  013701  001112                    4$:     MOV     WIDTH,R1          ;COLUMN COUNT TO R1
007454  004737  007466                            JSR     PC,REF            ;SEND END REFERENCE LINE
007460  104010                                    LF                        ;SEND LF
007462  104001                                    CHAIN
007464  000737                                    BR      1$                ;REPEAT TEST

007466  112200                            REF:    MOVB    (R2)+,R0          ;NUMBER TO R0
007470  104011                                    PRINTC                    ;PRINT IT
007472  112200                                    MOVB    (R2)+,R0          ;NUMBER TO R0
007474  104011                                    PRINTC                    ;PRINT IT
007476  005741                                    TST     -(R1)             ;DECREASE COUNTER BY 2
007500  012700  000137                            MOV     #137,R0           ;DASH (-) TO R0
007504  104011                            1$:     PRINTC                    ;PRINT IT
007506  005301                                    DEC     R1                ;DECREMENT COLUMN COUNTER
007510  001375                                    BNE     1$                ;BRANCH IF NO ZERO
007512  104014                                    CR                        ;SEND CR
007514  000207                                    RTS     PC                ;RETURN

007516  030460  031060  032060            LINE3:  .ASCII  /01020408163200/
007524  034060  033061  031063
007532  030060
                                                  .EVEN
```

```
                                        ;XXXXXXXXXX
                                        ;PT5--  SINGLE LINE FEED TEST --  TESTS THE LINE FEED
                                        ;       CAPABILITY FROM ALL COLUMNS.
                                        ;XXXXXXXXXX

007534  000005          PT5:    5                       ;TEST NUMBER
007536  007740                  PT6                     ;NEXT TEST
007540  104012                  PRTHDR                  ;PRINT TEST HEADER
007542  013701  001112    1$:   MOV     WIDTH,R1        ;COLUMN COUNT TO R1
007546  005741                  TST     -(R1)           ;DECREASE BY 2
007550  012700  000060          MOV     #60,R0          ;'0' TO R0
007554  104011            2$:   PRINTC                  ;SEND 0
007556  005301                  DEC     R1              ;DECREMENT COLUMN COUNTER
007560  001375                  BNE     2$              ;BRANCH IF NOT ZERO
007562  012700  000062          MOV     #62,R0          ;SEND A 2
007566  104011                  PRINTC
007570  104011                  PRINTC                  ;SEND A SECOND TWO
007572  023727  001112  000204  CMP     WIDTH,#132.     ;COMPARE COLUMN COUNT
007600  001404                  BEQ     3$              ;BRANCH IF EQ 132
007602  012700  003410          MOV     #3410,R0        ;DELAY 1.8 SEC
007606  104003                  DELAY
007610  000407                  BR      5$
007612  012700  000063    3$:   MOV     #63,R0          ;3'S TO R0
007616  012701  000100          MOV     #100,R1         ;64 TO COUNTER
007622  104011            4$:   PRINTC                  ;SEND CHARACTER
007624  005301                  DEC     R1              ;DECREMENT COUNT
007626  001375                  BNE     4$              ;BRANCH IF NOT ZERO
007630  104006            5$:   CRLF                    ;SEND A CR,LF
007632  013701  001112          MOV     WIDTH,R1        ;NO. COLUMNS TO R1
007636  012700  000134    6$:   MOV     #134,R0         ;BACKSLASH TO R0
007642  104011                  PRINTC                  ;SEND IT
007644  104010                  LF                      ;SEND LF
007646  005301                  DEC     R1              ;DECREMENT COUNTER
007650  001372                  BNE     6$              ;BRANCH IF NOT ZERO.
007652  104014                  CR                      ;SEND CR
007654  004737  007732          JSR     PC,PTSAL        ;SEND REF LINE #1
007660  104006                  CRLF                    ;SEND A CR,LF
007662  012700  001750          MOV     #1750,R0        ;DELAY 1 SEC
007666  104003                  DELAY
007670  004737  007732          JSR     PC,PTSAL        ;SEND A SECOND REF. LINE
007674  104006                  CRLF                    ;SEND A CR,LF
007676  104001                  CHAIN                   ;CHAIN TO NEXT TEST
007700  000720                  BR      1$              ;REPEAT TEST
007702  013701  001112  PTSAL:  MOV     WIDTH,R1        ;COLUMN COUNT TO R1
007706  012700  000061          MOV     #61,R0          ;"1" TO R0
007712  104011            1$:   PRINTC                  ;PRINT R0
007714  005301                  DEC     R1              ;DECREMENT COUNTER
007716  001407                  BEQ     2$              ;BRANCH IF=0
007720  005200                  INC     R0              ;INCREMENT CHARACTER
007722  020027  000071          CMP     R0,#71          ;COMP CHAR TO "9"
007726  101771                  BLOS    1$              ;BRANCH IF LOWER OR SAME
007730  012700  000060          MOV     #60,R0          ;RESET CHAR TO "0"
007734  000766                  BR      1$              ;CONTINUE
007736  000207            2$:   RTS     PC              ;FINISHED, RETURN TO CALLER
```

```
                                        ;XXXXXXXXXX
                                        ;
                                        ;PT6--  BACKSPACE TEST -- A REFERENCE LINE SUCH AS IN
                                        ;       TEST PT5 IS PRINTED.  THE SECOND LINE CONSISTS
                                        ;       OF PRINTING A BACKSLASH, BACKSPACE AND FORWARD
                                        ;       SLASH COMBINATION OUT TO THE GIVEN COLUMN WIDTH.
                                        ;       THIS LINE IS THEN FOLLOWED BY THE SAME TWO REFERENCE
                                        ;       LINES AS PRINTED IN TEST PT5.
                                        ;
                                        ;XXXXXXXXXX
007740  000006                PT6:    6                       ;TEST NUMBER
007742  010122                        PT7                     ;NEXT TEST
007744  104012                        PRTHDR                  ;PRINT TEST HEADER
007746  013701  001112          1$:   MOV     WIDTH,R1        ;COLUMN COUNT TO R1
007752  005741                        TST     -(R1)           ;DECREMENT BY 2
007754  012700  000060                MOV     #60,R0          ;"0" TO R0
007760  104011                2$:   PRINTC                  ;SEND 0
007762  005301                        DEC     R1              ;DECREMENT COLUMN COUNTER
007764  001375                        BNE     2$              ;BRANCH IF NOT ZERO
007766  012700  000062                MOV     #62,R0          ;"2" TO R0
007772  104011                        PRINTC                  ;SEND A "2"
007774  104011                        PRINTC                  ;SEND A SECOND "2"
007776  023727  001112  000204        CMP     WIDTH,#132.     ;COMPARE COLUMN COUNT
010004  001404                        BEQ     3$              ;BRANCH IF EQ 132
010006  012700  003410                MOV     #3410,R0        ;DELAY 1.8 SEC
010012  104003                        DELAY
010014  000407                        BR      5$
010016  012700  000063          3$:   MOV     #63,R0          ;3'S TO R0
010022  012701  000100                MOV     #100,R1         ;64 TO COUNTER
010026  104011                4$:   PRINTC                  ;SEND CHAR
010030  005301                        DEC     R1              ;DECREMENT COUNTER
010032  001375                        BNE     4$              ;CONTINUE IF NOT DONE
010034  104006                5$:   CRLF                    ;SEND A CR,LF
010036  013701  001112                MOV     WIDTH,R1        ;COLUMN COUNT TO R1
010042  012700  000134          6$:   MOV     #134,R0         ;BACKSLASH TO R0
010046  104011                        PRINTC                  ;SEND IT
010050  012700  000010                MOV     #10,R0          ;BACKSPACE TO R0
010054  104011                        PRINTC                  ;SEND IT
010056  012700  000057                MOV     #57,R0          ;FORWORD SLASH TO R0
010062  104011                        PRINTC                  ;SEND IT
010064  005301                        DEC     R1              ;END OF PAPER
010066  001365                        BNE     6$              ;BRANCH IF NO
010070  104010                        LF                      ;SEND LF
010072  104014                        CR                      ;SEND CR
010074  004737  007702                JSR     PC,PT5AL        ;SEND REF LINE #1
010100  104006                        CRLF                    ;SEND A CR,LF
010102  012700  001750                MOV     #1750,R0        ;DELAY 1 SEC
010106  104003                        DELAY
010110  004737  007702                JSR     PC,PT5AL        ;SEND SECOND REF LINE
010114  104006                        CRLF                    ;SEND A CR,LF
010116  104001                        CHAIN                   ;CHAIN TO NEXT TEST
010120  000712                        BR      1$              ;REPEAT TEST
```

```
                                        ;XXXXXXXXXX
                                        ;
                                        ;PT7--   OVERPRINT TEST-- A ROW OF ALTERNATING M'S AND
                                        ;        SPACES ARE PRINTED, OUT TO THE LAST COLUMN AND OVERPRINTED TWICE.
                                        ;        A SECOND LINE OF ALTERNATING SPACES AND "@'S" IS THEN
                                        ;        SENT 3 TIMES AS THE FIRST LINE.  THIS IS FOLLOWED
                                        ;        BY A THIRD AND FINAL LINE OF ALTERNATING '&'
                                        ;        AND SPACES.
                                        ;
                                        ;XXXXXXXXXX

010122  000007          PT7:    7                       ;TEST NUMBER
010124  010334                  PT10                    ;NEXT TEST
010126  104012                  PRTHDR                  ;PRINT TEST HEADER
010130  012703  000002  1$:     MOV     #2,R3           ;2 COUNT TO R3
010134  013701  001112  2$:     MOV     WIDTH,R1        ;NO. OF COLUMNS TO R1
010140  012700  000115  3$:     MOV     #115,R0         ;PRINT M
010144  104011                  PRINTC
010146  005301                  DEC     R1              ;END OF LINE
010150  001404                  BEQ     4$              ;BRANCH IF YES
010152  004737  006576          JSR     PC,SPC          ;SEND SPACE
010156  005301                  DEC     R1              ;END OF LINE?
010160  001367                  BNE     3$              ;BRANCH IF NO
010162  022703  000002  4$:     CMP     #2,R3           ;TEST R3
010166  001003                  BNE     6$              ;BRANCH IF NOT FIRST TIME
010170  104014          5$:     CR                      ;SEND CR
010172  005303                  DEC     R3              ;DECREASE LINE COUNTER
010174  000757                  BR      2$              ;REPEAT LINE
010176  005703          6$:     TST     R3              ;THIRD TIME?
010200  001373                  BNE     5$              ;BRANCH IF NOT
010202  104006                  CRLF                    ;NEXT LINE
010204  005723                  TST     (R3)+           ;REPEAT COUNTER TO R3
010206  013701  001112  7$:     MOV     WIDTH,R1        ;COLUMN COUNT TO R1
010212  004737  006575  8$:     JSR     PC,SPC          ;SEND SPACE
010216  005301                  DEC     R1              ;DECREASE COLUMN COUNT
010220  001405                  BEQ     9$              ;BRANCH IF 0, END OF LINE
010222  012700  000100          MOV     #100,R0         ;"@" TO R0
010226  104011                  PRINTC                  ;SEND IT
010230  005301                  DEC     R1              ;DECREASE COLUMN COUNT
010232  001367                  BNE     8$              ;BRANCH IF NOT 0 (NOT END)
010234  022703  000002  9$:     CMP     #2,R3           ;END OF LINE, FIRST TIME?
010240  001003                  BNE     11$             ;BRANCH IF NOT
010242  104014          10$:    CR                      ;SEND CR
010244  005303                  DEC     R3              ;DECREASE LINE COUNTER
010246  000757                  BR      7$              ;REPEAT LINE
010250  005703          11$:    TST     R3              ;TEST IF THIRD REPEAT
010252  001373                  BNE     10$             ;BRANCH IF NOT
010254  104006                  CRLF                    ;DO NEXT LINE
010256  005723                  TST     (R3)+           ;LINE REPEAT COUNTER TO R3
010260  013701  001112  12$:    MOV     WIDTH,R1        ;COLUMN COUNT TO R1
010264  012700  000046  13$:    MOV     #46,R0          ;"&" TO R0
010270  104011                  PRINTC                  ;PRINT IT
010272  005301                  DEC     R1              ;DECREASE COLUMN COUNT
010274  001404                  BEQ     14$             ;BRANCH IF END
```

```
 1695  010276  004737  006576                JSR     PC,SPC          ;SEND SPACE
 1696  010302  005301                        DEC     R1              ;DECREASE COLUMN COUNT
 1697  010304  001367                        BNE     13$             ;BRANCH IF NOT END
 1698  010306  022703  000002          14$:  CMP     #2,R3           ;TEST IF FIRST TIME
 1699  010312  001003                        BNE     16$             ;BRANCH IF =2, FIRST TIME
 1700  010314  104014                  15$:  CR                      ;CARRIAGE RETURN
 1701  010316  005303                        DEC     R3              ;DECREASE REPEAT COUNTER
 1702  010320  000757                        BR      12$             ;PRINT LINE AGAIN
 1703  010322  005703                  16$:  TST     R3              ;TEST IF END, R3=0
 1704  010324  001373                        BNE     15$             ;BRANCH IF NOT END
 1705  010326  104006                        CRLF                    ;SEND CR,LF
 1706  010330  104001                        CHAIN                   ;CHAIN TO NEXT TEST
 1707  010332  000676                        BR      1$              ;REPEAT TEST
```

B06


```
;*************
;
;PT10-- PRINTING FREQUENCY TEST-- 120 H'S ARE PRINTED ON 4 LINES
;        30 PER LINE. THE TEST IS SUCH THAT BETWEEN THE FIRST AND SECOND
;        "H" A 30 MSEC DELAY IS INTRODUCED. THIS DELAY IS THEN INCREASED
;        BETWEEN CHARACTERS OUT TO 60 CHARACTERS IN AN EXPONENTIAL
;        MANNER. THE DELAY IS THEN DECREASED IN THE SAME MANNER OUT TO THE
;        120TH CHARACTER. THIS DELAY IS CALCULATED AS FOLLOWS:
;
;        NEW DELAY = OLD DELAY (+ OR -) (OLD DELAY/16 + OLD DELAY/128)
;
;*************

                                 PT10:  [illegible]                     ;TEST NUMBER
                                        [illegible]                     ;NEXT TEST
                                        PRT+CR                          ;PRINT TEST HEADER
               000036            1$:    [illegible]   #36,R1            ;SET R1=30
               000170                   [illegible]   #120.,R2          ;SET CHAR COUNT = 120
               000036   010370          [illegible]   #30.,3$+2         ;SET UP DELAY VALUE
               000110            2$:    [illegible]   #110,R0           ;"H" TO R0
                                        PRINTC                          ;SEND IT
               000036            3$:    [illegible]   #30.,R0
                                        DELAY                           ;DELAY
                                        [illegible]   R1                ;DEC. COUNT OF CHARS PER LINE
                                        [illegible]   6$                ;BRANCH IF 0, END OF LINE
                                 4$:    [illegible]   R2                ;DECREMENT CHAR COUNTER
                                        [illegible]   7$                ;BRANCH IF END
               010370                   [illegible]   3$+2,R4           ;GET OLD DELAY
                                        [illegible]   R4                ;CAL 1/16 OF OLD DELAY
                                        [illegible]   R4
                                        [illegible]   R4
                                        [illegible]   R4
                                        [illegible]   R4,R5             ;SAVE 1/16 IN R5
                                        [illegible]   R4                ;CAL 1/128 OF OLD DELAY
                                        [illegible]   R4
                                        [illegible]   R4
                                        ADD           R4,R5             ;1/16 +1/128 TO R5
               000074                   [illegible]   #60.,R2           ;TEST WHICH HALF OF THE 120 CHARS.
                                        [illegible]   5$                ;BRANCH IF LT OR EQ 60
               010370                   [illegible]   R5,3$+2           ;GT 60, DECREASE DELAY BY 34 MSEC.
                                        BR            2$                ;GO PRINT AGAIN
               010370            5$:    [illegible]   R5,3$-2           ;LT HALF WAY, ADD DELAY OF 34 MSEC.
                                        [illegible]   2$                ;GO PRINT AGAIN
                                 6$:    [illegible]                     ;SEND CRLF
               000036                   [illegible]   #36,R1            ;SET R1=30
                                        [illegible]   4$
                                 7$:    [illegible]                     ;SEND CR,LF
                                        [illegible]                     ;RETURN TO NEXT TEST
                                        [illegible]   1$                ;REPEAT TEST
```

```
                                ;XXXXXXXXXX
                                ;
                                ;PT11-- RIBBON FEED TEST -- THIS TEST PRINTS A SINGLE COLUMN
                                ;        OF X'S [illegible] LINES DOWN THE LEFT MARGIN OF THE PAGE.  VISUALLY
                                ;        CHECK THE RIBBON FEED MECHANISM FOR PROPER OPERATION.
                                ;
                                ;XXXXXXXXXX

                                PT11:   11                              ;TEST NUMBER
                                        PT12                            ;NEXT TEST
                                        PRTHDR                          ;PRINT TEST HEADER
[illegible]                     1$:     MOV     #30,R1                  ;SET R1=24
[illegible]                     2$:     MOV     #130,R0                 ;SET CHAR = X
                                        PRINTC                          ;PRINT X
                                        CRLF                            ;SEND CR-LF
                                        DEC     R1                      ;DEC COUNT
                                        BNE     2$                      ;BRANCH IF NOT DONE TEST
                                        CHAIN                           ;CHAIN TO NEXT TEST
                                        BR      1$                      ;REPEAT TEST

                                ;XXXXXXXXXX
                                ;
                                ;PT12-- PRINTER BELL TEST-- THE LAST TEST IN THE
                                ;        PRINTER TEST SEQUENCE.  THIS TEST OUTPUTS
                                ;        EIGHT BELL SIGNALS TO THE PRINTER
                                ;
                                ;XXXXXXXXXX

                                PT12:   12                              ;THIS TEST
                                        [illegible]                     ;NEXT TEST
                                        PRTHDR                          ;PRINT TEST HEADER
[illegible]                     PT12A:  MOV     #10,R1                  ;COUNTER TO R1
[illegible]                     1$:     MOV     #7,R0                   ;BELL TO R0
                                        PRINTC                          ;SEND IT
                                        DEC     R1                      ;DECREMENT COUNT
                                        BNE     1$                      ;BRANCH IF NOT ZERO
                                        [illegible]                     ;SEND LF
[illegible]                             MOV     #3720,R0                ;DELAY 2 SEC BEFORE RESTARTING
                                        DELAY

[illegible]                             MOV     #[illegible],R0         ;CHECK IF UNDER ACT11 OR XXDP
                                        [illegible]   HERE              ;CONTINUE TEST SEQUENCE
                                        [illegible]
                                [illegible]: [illegible]  R1,R0
                                        [illegible]
                                HERE:   CHAIN                           ;CHAIN TO NEXT TEST
                                        BR      PT12A                   ;REPEAT TEST
```

```
                        ;*****************
                        ;
                        ;PT17--TYPE TEST
                        ;       THIS TEST PRINTS 2 FULL LINES OF EACH PRINTABLE
                        ;       CHARACTER AND OVERPRINTS THE SECOND LINE 4 TIMES.
                        ;       THIS TEST IS CONTINUOUS RUNNING ONCE INITIATED,
                        ;       LOOPING AUTOMATICALLY ON ITSELF.
                        ;       END OF PASS COUNT IS CLEARED WHENEVER THE TEST IS RESTARTED.
                        ;
                        ;*****************

PT17B:  17                                      ;TEST NUMBER
        PT173                                   ;NEXT TEST
        JMP     PT17C                           ;CONTINUE
PT17:   17                                      ;TEST NUMBER
        PT173                                   ;NEXT TEST
        CLR     PASCNT                          ;CLEAR PASS COUNT
        PRTHDR                                  ;PRINT TEST HEADER
PT17C:  MOV     #41,REPT                        ;SET START CHAR
1$:     MOV     [illegible],R1                  ;SET COLUMN COUNT
2$:     MOV     REPT,R0                         ;GET CHAR
        PRINTC                                  ;SEND CHAR
        DEC     R1                              ;DECREMENT COUNT
        BNE     2$                              ;BRANCH IF NOT DONE
        CRLF                                    ;SEND CR-LF
        MOV     #5,R2                           ;SET OVERPRINT COUNT
3$:     MOV     [illegible],R1                  ;SET COLUMN COUNT
4$:     MOV     REPT,R0                         ;GET CHAR
        PRINTC                                  ;SEND CHAR
        DEC     R1                              ;DECREMENT COUNT
        BNE     4$                              ;BRANCH IF NOT DONE
        CR                                      ;SEND CR
        DEC     R2                              ;DONE OVERPRINTS?
        BNE     3$                              ;NO, CONTINUE
        LF                                      ;SEND LF
        INC     REPT                            ;GET NEXT CHAR
        CMP     #177,REPT                       ;DONE CHAR SET?
        BNE     1$                              ;NO, CONTINUE
        INC     PASCNT                          ;INCREMENT PASS COUNT
        MOV     #PASMES,R0                      ;SET MESSAGE ADDRESS
        MOV     PASCNT,R1                       ;# TO CONVERT
        MOV     #4,R2                           ;# DIGITS
        BTOASC                                  ;CONVERT PASS COUNT TO ASCII
        TYPEBF                                  ;TYPE PASS COUNT
        ENDPAS
        [illegible]                             ;REPEAT TEST
        BR      PT17C

PASCNT: 0
```

```
                                        .SBTTL  ECHO TESTS

                                ;XXXXXXXXXX
                                ;E020-- CHARACTER ECHO TEST-- ALL PRINTABLE AND
                                ;       NON-PRINTING CHARACTERS TYPED ON THE KEYBOARD
                                ;       ARE USED TO DRIVE THE PRINTER, ONE CHARACTER AT
                                ;       A TIME.  A "RUBOUT" WILL CAUSE THE TEST TO BE
                                ;       TERMINATED.
                                ;
                                ;XXXXXXXXXX

                                E020:   20                              ;TEST NUMBER
                                        E021                            ;NEXT TEST
                                        PRTHDR                          ;PRINT TEST HEADER
                                1$:     READ                            ;GO WAIT FOR KEYBOARD INPUT
                  000035                MOV     #30.,R0                 ;DELAY FOR HALF DUPLEX
                                        DELAY
                                        MOV     TEMECH,R0               ;GET CHAR
                                        CMP     #177,R0                 ;CHECK IF RUBOUT
                                        BEQ     2$                      ;BRANCH IF YES
                                        PRTCHO                          ;NO, CHECK PRINTER READ
                                        BR      1$
                                2$:     TYPEM                           ;PRINT TERMINATION MESSAGE
                                        ECOEND
                                        CHAIN                           ;CHAIN TO NEXT TEST
                                        BR      1$                      ;REPEAT TEST
```

```
                                        ;XXXXXXXXXXX
                                        ;
                                        ;EC21-- LINE ECHO TEST, FAST RATE-- THIS TEST WILL
                                        ;       CAUSE THE CONTINUAL PRINTING OF "C" AT THE MAXIMUM
                                        ;       RATE UNTIL EITHER ANOTHER CHARACTER IS SELECTED
                                        ;       BY PRESSING A KEY ON THE KEYBOARD OR TERMINATION BY THE
                                        ;       RUBOUT.
                                        ;
                                        ;XXXXXXXXXXX
011022  000021                  EC21:   21                      ;TEST NUMBER
[illegible]  [illegible]                EC22                    ;NEXT TEST
[illegible]  [illegible]                PRTHDR                  ;PRINT TEST HEADER
[illegible]  [illegible]  000060  001114  EC21A:  MOV   #60,REPT  ;CHARACTER TO BE REPEATED  C
[illegible]  [illegible]  001118  001122  2$:     MOV   WIDTH,POSI ;SET CHAR COUNT
[illegible]  [illegible]  001114          1$:     MOV   REPT,R0    ;CHAR TO TEMPCH
[illegible]  104011                     PRINTC                  ;PRINT CHAR
[illegible]  [illegible]  001122                DEC     POSI    ;DECREMENT POSITION COUNTER
[illegible]  [illegible]                BNE     1$              ;CONTINUE
[illegible]  [illegible]                CRLF                    ;SEND A CR AND LF
[illegible]  [illegible]                BR      2$

[illegible]  [illegible]        EC21B:  TYPEM                   ;PRINT TERMINATION MESG
[illegible]  [illegible]                EC21END
[illegible]  [illegible]                CHAIN                   ;CHAIN TO NEXT TEST
[illegible]  [illegible]                BR      EC21A           ;REPEAT TEST
```

G06


```
                                        ;XXXXXXXXXX
                                        ;
                                        ;EC22-- LINE ECHO TEST, SLOW RATE-- SAME AS EC21 EXCEPT
                                        ;       THAT A DELAY IS INTRODUCED BETWEEN CHARACTERS
                                        ;       TO PRODUCE AN LOW ACTION
                                        ;
                                        ;XXXXXXXXXX

[illegible] [illegible]                 EC22:   22
                                                EC23
        104010                                  PRTHDR                  ;PRINT TEST HEADER
[illegible] 000060 [illegible]          EC22A:  MOV     #60,REPT        ;LOAD 0 AS INITIAL CHARACTER
[illegible] [illegible] 001122          3$:     MOV     WIDTH,POSI      ;SET CHAR COUNT
[illegible] 001114                      1$:     MOV     REPT,R0         ;READY CHAR TO TEMPCH
        104011                                  PRINTC                  ;OUTPUT CHAR
[illegible] 003410                              MOV     #3410,R0
        104023                                  DELAY
[illegible] 001122                              DEC     POSI            ;DECREMENT POSITION COUNTER
[illegible]                                     BNE     1$              ;BRANCH IF NOT DONE LINE
[illegible]                             2$:     CRLF                    ;SEND A CR AND LF
[illegible]                                     BR      3$

[illegible] [illegible]                 EC22B:  TYPEM                   ;PRINT TERMINATION MESSAGE
[illegible]                                     ECEND
[illegible]                                     CHAIN                   ;CHAIN TO NEXT TEST
[illegible]                                     BR      EC22A           ;REPEAT TEST
```

```
;********
;
;       THIS FOLLOWING TABLE IS USED BY TEST EC23
;
;********

XCNIC:  .ASCII  <NUL>
        .ASCII  <SOH>
        .ASCII  <STX>
        .ASCII  <ETX>
        .ASCII  <EOT>
        .ASCII  <ENQ>
        .ASCII  <ACK>
        .ASCII  <BEL>
        .ASCII  <BS>
        .ASCII  <HT>
        .ASCII  <LF>
        .ASCII  <VT>
        .ASCII  <FF>
        .ASCII  <CR>
        .ASCII  <SO>
        .ASCII  <SI>
        .ASCII  <DLE>
        .ASCII  <DC1>
        .ASCII  <DC2>
        .ASCII  <DC3>
        .ASCII  <DC4>
        .ASCII  <NAK>
        .ASCII  <SYN>
        .ASCII  <ETB>
        .ASCII  <CAN>
        .ASCII  <EM>
        .ASCII  <SUB>
        .ASCII  <ESC>
        .ASCII  <FS>
        .ASCII  <GS>
        .ASCII  <RS>
        .ASCII  <US>

        .EVEN
```

```
                                        ;XXXXXXXXXX
                                        ;
                                        ;E023-- CHARACTER CODE TEST-- ALL CHARACTERS SELECTED
                                        ;       WILL BE ECHOED ALONG WITH ITS OCTAL CODE.
                                        ;       A MNEMONIC WILL BE PRINTED INSTEAD OF THE CHARACTER
                                        ;       IF IT IS A NON-PRINTING CHARACTER.
                                        ;       THE PARITY OF THE RECEIVED CODE WILL BE
                                        ;       INDICATED AS EITHER EVEN OR ODD.
                                        ;
                                        ;XXXXXXXXXX

011360  000023                          E023:   23                      ;TEST NUMBER
011362  011702                                  E024                    ;NEXT TEST
011364  104012                                  PRTHDR                  ;PRINT TEST HEADER
011366  104013                          1$:     READ                    ;GO WAIT FOR CHARACTER
011370  012700  000036                          MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
011374  104003                                  DELAY
011376  023727  001124  000041                  CMP     TEMPCH,#41      ;TEST IF CHAR IS PRINTABLE
011404  103015                                  BHIS    3$              ;BRANCH IF IT IS
011406  004737  011542                          JSR     PC,STRLN        ;STORE CODE INTO MESSAGE
011412  013700  001124                          MOV     TEMPCH,R0       ;GET CODE AGAIN
011416  006300                                  ASL     R0              ;MULT BY 2
011420  006300                                  ASL     R0              ;MULT BY 4
011422  062700  011154                          ADD     #MONIC,R0       ;ADD ADDR OF MNEMONIC TABLE
011426  004737  011620                          JSR     PC,MOVNUM       ;MOV MNEMONIC TO MESSAGE
011432  104000                          2$:     TYPE                    ;TYPE CODE AND MNEMONIC
011434  017237                                  E023M                   ;ADDRESS OF MESSAGE
011436  000752                                  BR      1$              ;GO WAIT FOR NEXT CHARACTER
011440  023727  001124  000177          3$:     CMP     TEMPCH,#177     ;TEST IF CHAR IS A RUBOUT
011446  001421                                  BEQ     4$              ;BRANCH IF RUBOUT
011450  012701  011672                          MOV     #MG24,R1
011454  113721  001124                          MOVB    TEMPCH,(R1)+
011460  112721  000040                          MOVB    #40,(R1)+
011464  112721  000040                          MOVB    #40,(R1)+
011470  112721  000040                          MOVB    #40,(R1)+
011474  004737  011542                          JSR     PC,STRLN        ;STORE CODE INTO MESSAGE
011500  012700  011672                          MOV     #MG24,R0        ;ADDR OF CHAR INTO R0
011504  004737  011620                          JSR     PC,MOVNUM       ;MOVE CHAR INTO MESSAGE
011510  000750                                  BR      2$              ;TYPE MESSAGE
011512  004737  011542                  4$:     JSR     PC,STRLN        ;RUBOUT, CONVERT AND STOR CODE
011516  012700  011676                          MOV     #MG25,R0        ;ADDR. OF DEL INTO R0
011522  004737  011620                          JSR     PC,MOVNUM       ;MOVE DEL INTO MESSAGE
011526  104000                                  TYPE                    ;TYPE MESSAGE
011530  017237                                  E023M                   ;ADDR OF MESSAGE
011532  104002                                  TYPEM
011534  017210                                  E0OEND
011536  104001                                  CHAIN                   ;CHAIN TO NEXT TEST
011540  000712                                  BR      1$              ;REPEAT TEST
```

```
011542  012702  000003          STPLN:  MOV     #3,R2           ;COUNT OF 3 TO R2
011546  012701  017241                  MOV     #LINES,R1       ;ADDR OF MESG TO R1
011552  062701  000003                  ADD     #3,R1           ;POINT TO LAST SPACE IN MESG
011556  013700  001130          1$:     MOV     PCHAR,R0        ;MOVE OCTAL CODE TO R0
011562  042700  177770                  BIC     #177770,R0      ;SAVE LS OCTAL CHAR.
011566  062700  000060                  ADD     #60,R0          ;MAKE ASCII
011572  110041                          MOVB    R0,-(R1)        ;MOVE INTO MESG
011574  005302                          DEC     R2              ;DECREMENT CHAR COUNTER
011576  001407                          BEQ     2$              ;BRANCH IF 3 MOVED
011600  006237  001130                  ASR     PCHAR           ;NOT THREE, SHIFT NEXT OCTAL
011604  006237  001130                  ASR     PCHAR           ;CHARACTER TO THE RIGHT
011610  006237  001130                  ASR     PCHAR           ;
011614  000760                          BR      1$              ;CONVERT AND STORE NEXT CHAR.
011616  000207                  2$:     RTS     PC              ;RETURN TO CALLER


011620  012701  017245          MOVNUM: MOV     #LINESA,R1      ;ADDR OF LINES IN R1
011624  012702  000004                  MOV     #4,R2           ;COUNT OF 3 TO R2
011630  112021                  1$:     MOVB    (R0)+,(R1)+     ;MOV 3 CHARS TO MESG AREA
011632  005302                          DEC     R2              ;DECREMENT COUNTER
011634  001375                          BNE     1$              ;BRANCH IF NOT ALL DONE
011636  105737  001126                  TSTB    PARITY          ;TEST PARITY FLAG
011642  001003                          BNE     2$              ;BRANCH IF ODD PARITY
011644  012700  017302                  MOV     #EVEN,R0        ;SET MESSAGE FOR EVEN PARITY
011650  000402                          BR      3$              ;CONTINUE
011652  012700  017306          2$:     MOV     #ODD,R0         ;SET MESSAGE FOR ODD PARITY
011656  012702  000004          3$:     MOV     #4,R2           ;SET WORD COUNT
011662  112021                  4$:     MOVB    (R0)+,(R1)+     ;MOVE CHAR TO MESSAGE
011664  005302                          DEC     R2              ;DEC CHAR COUNT
011666  001375                          BNE     4$              ;CONTINUE
011670  000207                          RTS     PC              ;RETURN

011672  020040  020040          MG24:   .ASCII  '               ;SAVE CHARACTER CODE

                                        .EVEN

011676  042504  020114          MG25:   .ASCII  /DEL            ;MNEMONIC FOR RUBOUT

                                        .EVEN
```

```
                                        ;AYXXXXXXXX
                                        ;
                                        ;E.24-- SELECTED PATTERN ECHO TEST-- SELECT 1 TO 256
                                        ;       CHARACTERS.  EACH WILL BE ECHOED
                                        ;       AND STORED UNTIL THE CNTL/C IS SELECTED.
                                        ;       AT THAT TIME ALL CHARACTERS WILL BE PRINTED AS
                                        ;       A CONTINOUS STRING UNTIL EITHER THE RUBOUT IS
                                        ;       SELECTED TO TERMINATE OR THE CNTL/C IS SELECTED
                                        ;       AGAIN.  A TERMINATING CNTL/C FOLLOWED BY A CNTL/C WILL ALWAYS
                                        ;       CAUSE THE LAST INPUTTED STRING TO BE REPEATED. A TERMINATING
                                        ;       CNTL/C FOLLOWED BY SOME OTHER CHARACTER WILL START A NEW
                                        ;       STRING.
                                        ;
                                        ;XXXXXXXXXX
011702  000024                  E024:   24                      ;TEST NUMBER
011704  012466                          E025                    ;NEXT TEST
011706  104012                          PRTHDR                  ;PRINT TEST HEADER
011710  005001                  E024B:  CLR     R1              ;CLEAR CHARACTER COUNT
011712  012702  012064                  MOV     #BUFR,R2        ;ADDRESS OF BUFFER TO R2
011716  104013                  1$:     READ                    ;WAIT FOR INPUT
011720  012700  000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
011724  104003                          DELAY
011726  022737  000177  001124          CMP     #177,TEMPCH     ;TEST IF RUBOUT
011734  001447                          BEQ     TERM            ;BRANCH IF RUBOUT
011736  022737  000003  001124          CMP     #3,TEMPCH       ;TEST IF .CNTL-C
011744  001416                          BEQ     OUTPUT          ;BRANCH IF CNTL-C
011746  020127  000400                  CMP     R1,#256.        ;YES, CHECK IF CHAR CNT IS EQ. GT 256
011752  103361                          BHIS    1$              ;BRANCH IF YES, IGNORE CHAR
011754  013700  001124                  MOV     TEMPCH,R0       ;GET CHAR
011760  110022                          MOVB    R0,(R2)+        ;STORE CHAR INTO BUFFER
011762  005201                          INC     R1              ;INCREMENT CHARACTER COUNT
011764  104021                          ECHO                    ;OUTPUT CHAR
011766  000753                          BR      1$              ;GO WAIT FOR NEXT CHAR

011770  005037  001124          E024R:  CLR     TEMPCH          ;CLEAR CONTROL-C FROM BUFFER
011774  104006                          CRLF                    ;CONTROL-C RETURN FROM PRINT ROUTINE
011776  104010                          LF
012000  000743                          BR      E024B
```

```
                                        ;********
                                        ;
                                        ;SECTION TO OUTPUT CONTINOUS STRING
                                        ;
                                        ;********

012002  020227  012064          OUTPUT: CMP     R2,#BUFR        ;CHECK IF POINTER IS AT START OF BUFFER
012006  001405                          BEQ     1$              ;YES, DON'T STORE ^C IN TABLE
012010  113722  001124                  MOVB    TEMPCH,(R2)+    ;STORE ^C IN TABLE
012014  005037  001124                  CLR     TEMPCH          ;CLEAR CONTROL-C FROM BUFFER
012020  104006                          CRLF                    ;SEND A CR LF
012022  012702  012064          1$:     MOV     #BUFR,R2        ;BUFFER ADDRESS TO R2
012026  005037  001124                  CLR     TEMPCH          ;CLEAR CONTROL-C
012032  121227  000003                  CMPB    (R2),#3         ;FIRST CHAR IN TABLE ^C ?
012036  001724                          BEQ     E0248           ;YES, GO LOOK FOR MORE INPUT
012040  112200                  E$:     MOVB    (R2)+,R0        ;GET CHAR
012042  020027  000003                  CMP     R0,#3           ;DONE STRING?
012046  001765                          BEQ     1$              ;YES, RESTART STRING
012050  104011                          PRINTC                  ;OUTPUT CHAR
012052  000772                          BR      2$

012054  104002          TERM:   TYPEM                           ;OUTPUT TERMINATION MESSAGE
012056  017210                  ECODEND
012060  104001                  CHAIN                           ;CHAIN TO NEXT TEST
012062  000712                  BR      E0243                   ;REPEAT TEST

012064  000003          BUFR:   3                               ;INITIALIZE FIRST CHAR AS CNTL-C IN TABLE
012066  000400                  .BLKB   256.                    ;256 CHARACTER BUFFER
```

```
                                        ;XXXXXXXXXXX
                                        ;
                                        ;E025-- BELL ECHO TEST-- A MESSAGE IS PRINTED AND
                                        ;       THE TEST WAITS FOR SOME PRINTABLE CHARACTER
                                        ;       TO BE SELECTED ON THE KEYBOARD (GT040).  THIS
                                        ;       TEST IS VALID ONLY IF THE PAPER WIDTH IS GT 64
                                        ;       COLUMNS.  IF LT64 COLUMNS AN ILLEGAL BELL TEST
                                        ;       MESSAGE IS PRINTED.
                                        ;
                                        ;XXXXXXXXXXX

012466  000025                  E025:   25                      ;TEST NUMBER
012470  010756                          E02C                    ;NEXT TEST HEADER
012472  104012                          PRTHDR                  ;PRINT TEST HEADER
012474  023727  001112  000101  1$:     CMP     WIDTH,#101      ;TEST IF COLUMN COUNTIS EQ.GT 64
012502  103424                          BLO     4$              ;BRANCH IF NOT
012504  104002                          TYPEM                   ;TYPE TEST MESG
012506  017063                          E025MA                  ;ON ALL TERM'S
012510  000402                          BR      3$              ;WAIT FOR CHAR
012512  104000                  2$:     TYPE                    ;TYPE TEST MESG ON TERM
012514  017063                          E025MA                  ;CHARACTER WAS RECEIVED ON
012516  104013                  3$:     READ                    ;WAIT FOR OPERATOR RESPONSE
012520  012700  000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
012524  104003                          DELAY
012526  113700  001124                  MOVB    TEMPCH,R0       ;CHAR TO R0
012532  020027  000040                  CMP     R0,#40          ;TEST IF PRINTABLE
012536  103767                          BLO     3$              ;BRANCH IF NON-PRINTABLE
012540  022700  000177                  CMP     #177,R0         ;CHECK IF CHAR IS RUBOUT
012544  001405                          BEQ     5$              ;BRANCH IF YES
012546  104021                          ECHO                    ;PRINT CHAR
012550  104007                          SCRLF                   ;SEND A CRLF
012552  000757                          BR      2$              ;REPEAT
012554  104002                  4$:     TYPEM                   ;TYPE ERROR MESSAGE
012556  017163                          E025MB
012560  104002                  5$:     TYPEM                   ;PRINT TERMINATION
012562  017210                          ECOEND
012564  104001                          CHAIN                   ;EXIT TO NEXT TEST
012566  000742                          BR      1$              ;REPEAT TEST
```

```
                                        .SBTTL  OPTION TESTS

                                ;XXXXXXXXXXXXXXX
                                ;
                                ;TEST30 -       SECONDARY CHARACTER SET OPTION
                                ;
                                ;XXXXXXXXXXXXXXX

012570  000030                  TEST30: 30
012572  012570                          TEST30
012574  104012                          PRTHDR                  ;PRINT TEST HEADER
012576  012704  000010                  MOV     #8.,R4          ;SET PASS COUNT
012602  104002  012666          2$:     TYPEM,  10$             ;INDICATE PRIMARY SET AND SEND "SI"
012606  012702  000177                  MOV     #177,R2         ;SET END CHAR
012612  004737  012700                  JSR     PC,30$          ;PRINT CHAR SET
012616  104002  012673                  TYPEM,  20$             ;INDICATE SECONDARY CHAR SET
012622  013702  012750                  MOV     T30SC,R2                ;SET CHAR SET LIMIT
012626  020227  000377                  CMP     R2,#377         ;USING 8 BITS INSTEAD OF SI?
012632  001403                          BEQ     3$              ;BRANCH IF YES
012634  012700  000016                  MOV     #16,R0          ;SET SO CHAR
012640  104011                          PRINTC                  ;SEND IT
012642  004737  012700          3$:     JSR     PC,30$          ;PRINT CHAR SET
012646  104006                          CRLF                    ;BLANK LINE
012650  005304                          DEC     R4              ;DEC PASS COUNT
012652  001353                          BNE     2$              ;FINISH TEST
012654  012700  000017                  MOV     #17,R0          ;SET SI CHAR AGAIN
012660  104011                          PRINTC                  ;MAKE SURE ON PRIMARY CHAR SET
012662  104001                          CHAIN                   ;NEXT TEST SELECTION OR LOOP
012664  000741                          BR      TEST30          ;LOOP ON TEST

012666  021417  036461  000     10$:    .ASCIZ  <17>/#1=/
012673    017  031043  000075  20$:    .ASCIZ  <17>/#2=/
                                        .EVEN

012700  010201                  30$:    MOV     R2,R1           ;GET LIMIT CHAR
012702  042701  177537                  BIC     #177537,R1      ;GET START CHAR
012706  013703  001112                  MOV     WIDTH,R3        ;GET COLUMN COUNT
012712  162703  000003                  SUB     #3,R3           ;SUBTRACT 3
012716  010100                  31$:    MOV     R1,R0           ;GET CHAR
012720  104011                          PRINTC                  ;PRINT IT
012722  005201                          INC     R1              ;NEXT CHAR
012724  020102                          CMP     R1,R2           ;DONE CHAR SET?
012726  001406                          BEQ     32$             ;EXIT IF DONE
012730  005303                          DEC     R3              ;DEC COLUMN COUNT
012732  001371                          BNE     31$             ;FINISH LINE
012734  104006                          CRLF                    ;SEND CR-LF WHEN DONE LINE
012736  013703  001112                  MOV     WIDTH,R3        ;RESET COLUMN COUNT
012742  000765                          BR      31$             ;CONTINUE
012744  104006                  32$:    CRLF                    ;SEND CR-LF
012746  000207                          RTS     PC              ;RETURN

012750  000177                  T30SC:  .WORD   177             ;CHAR SET LIMIT
                                        ;CHANGE TO 377 WHEN USING 8 BIT CHAR SELECTION
```

```
[illegible]                  ;\\\\\\\\\\\\\\\\\\\\
                             ;
                             ;TEST31 -       SELECTIVE ADDRESSING OPTION
                             ;
                             ;\\\\\\\\\\\\\\\\\\\\

                             TEST31: 3$:
                                     TEST31
                                     CRLF                        ;SEND CRLF
          013542                     MOV     34$,R0              ;SET EOT CHAR
                                     PRINTC                      ;SEND IT
          013372                     TYPEM,  10$                 ;TRY PRINTING ERROR MESG
          000007                     MOV     #7,R0               ;SET BEL CHAR
                                     PRINTC                      ;SEND IT
          000002                     MOV     #2,R0               ;SET STX CHAR
                                     PRINTC                      ;SEND IT
                                     PRTHDR                      ;PRINT TEST HEADER ON ALL TERMINALS
          013542                     MOV     34$,R0              ;SET EOT CODE
                                     PRINTC                      ;SEND IT
          000002                     MOV     #2,R0               ;SET STX CODE
                                     PRINTC                      ;SEND IT
          013372                     TYPEM,  10$                 ;TRY PRINT ERROR MESG
          013520                     MOV     #30$,R3             ;SET TABLE POINTER
                             1$:     TST     (R3)                ;CHECK TABLE POINTER
                                     BEQ     2$                  ;NEXT PORTION OF TEST IF DONE
          013542                     MOV     34$,R0              ;SEND EOT CHAR
                                     PRINTC
                                     MOV     (R3),R0             ;SEND GROUP SELECT CHAR
                                     PRINTC                      ;SEND IT
          000002                     MOV     #2,R0               ;SEND STX CHAR
                                     PRINTC
          013436                     TYPEM,  14$                 ;TYPE MESG
                                     MOV     (R3)+,R0            ;TYPE SELECT CHAR FOR MESG
                                     PRINTC
                                     CRLF                        ;CR-LF
                                     BR      1$                  ;CONTINUE - NEXT SELECT CHAR
          013546             2$:     MOV     #40$,R3             ;SET TABLE ADR
                             3$:     TST     (R3)                ;CHECK SELECT CHAR
                                     BEQ     4$                  ;CONTINUE TEST
          013542                     MOV     34$,R0              ;SEND EOT CHAR
                                     PRINTC                      ;ALL TERMS OFF
                                     MOV     (R3),R0             ;GET UNIQUE SELECT CHAR
                                     PRINTC                      ;SEND IT - THAT TERM ON
          013372                     TYPEM,  10$                 ;TRY PRINTING ERROR MESG
          000002                     MOV     #2,R0               ;SEND STX
                                     PRINTC
          013444                     TYPEM,  15$                 ;TYPE SELECT CHAR MESG
                                     MOV     (R3),R0             ;PRINT SELECT CHAR FOR MESG
                                     PRINTC
                                     CRLF
          013462                     TYPEM,  20$                 ;PRINT MESG
                                     READ                        ;READ CHAR FROM SELECTED TERM
          000036                     MOV     #30.,R0             ;DELAY FOR HALF DUPLEX
                                     DELAY
```

```
013156  022737  000177  001124          CMP     #177,TEMPCH     ;CHECK CHAR
013164  001013                          BNE     5$              ;EXIT IF RUBOUT
013166  013700  013542                  MOV     34$,R0          ;ENABLE ALL TERMINALS
013172  104011                          PRINTC
013174  012700  000007                  MOV     #7,R0
013200  104011                          PRINTC
013202  012700  000002                  MOV     #2,R0
013206  104011                          PRINTC
013210  000137  002450                  JMP     TTYIH           ;GO TO KYBD CONTROL
013214  013700  001124          5$:     MOV     TEMPCH,R0       ;GET CHAR
013220  104021                          ECHO                    ;ECHO CHAR
013222  104006                          CRLF                    ;SEND CR-LF
013224  013700  013542                  MOV     34$,R0          ;SEND EOT CHAR
013230  104011                          PRINTC
013232  013700  013544                  MOV     35$,R0          ;SEND DUMMY SELECT CHAR
013236  104011                          PRINTC
013240  012700  000002                  MOV     #2,R0           ;SEND STX
013244  104011                          PRINTC
013246  104002  013372                  TYPEM,  10$             ;TRY PRINTING ERROR MESSAGE
013252  012700  000003                  MOV     #3,R0           ;SEND ETX
013256  104011                          PRINTC
013260  011300                          MOV     (R3),R0         ;SEND UNIQUE SELECT CHAR
013262  104011                          PRINTC
013264  012700  000002                  MOV     #2,R0           ;SEND STX
013270  104011                          PRINTC
013272  104002  013444                  TYPEM,  15$             ;PRINT SELECT MESG ON SELECTED TERMINAL
013276  011300                          MOV     (R3),R0         ;PRINT SELECT CHAR FOR MESG
013300  104011                          PRINTC
013302  104006                          CRLF                    ;SEND CR-LF
013304  012700  000003                  MOV     #3,R0           ;SEND ETX
013310  104011                          PRINTC
013312  012700  013544                  MOV     #35$,R0         ;SEND DUMMY SELECT CHAR
013316  104011                          PRINTC
013320  012700  000002                  MOV     #2,R0           ;SEND STX
013324  104011                          PRINTC
013326  104002  013444                  TYPEM,  15$             ;PRINT MESG ON SELECTED TERM
013332  012300                          MOV     (R3)+,R0        ;PRINT SELECT CHAR FOR MESG
013334  104011                          PRINTC
013336  104006                          CRLF                    ;SEND CR-LF
013340  000???                          BR      3$              ;CONTINUE
013342  013700  013542          4$:     MOV     34$,R0          ;ENABLE ALL LINES
013346  104011                          PRINTC                  ;BEFORE EXITING TEST
013350  012700  000007                  MOV     #7,R0
013354  104011                          PRINTC
013356  012700  000002                  MOV     #2,R0
013362  104011                          PRINTC
013364  [illegible]                     CHAIN                   ;CHAIN TO NEXT TEST IF LOOP ON TEST
013366  000137  [illegible]             JMP     TEST21          ;LOOP ON TEST
```

D07

```
013372  051105  047522  026122   10$:    .ASCIZ   ERROR, ALL TERMINALS SHOULD BE OFF <CRLF>
013400  040440  046114  052040
013406  051105  044515  040516
013414  051514  051440  047510
013422  046125  020104  042502
013430  047440  043106  000200
013436  051107  052517  020120   14$:    .ASCII   GROUP
013444  042523  042514  052103   15$:    .ASCIZ   SELECT CHAR =
013452  041440  040510  020122
013460  020075     000
013463     124  050131  020105   20$:    .ASCIZ   TYPE ANY PRINTABLE CHAR ...
013470  047101  020131  051120
013476  047111  040524  046102
013504  020105  044103  051101
013512  027040  027056  000040
                                         .EVEN
013520  000107                   30$:    107                       ;GROUP SELECT CHAR TABLE
013522  000000                           0                         ;FIRST ZERO = END OF TABLE
013524  000000                           0
013526  000000                           0
013530  000000                           0
013532  000000                           0
013534  000000                           0
013536  000000                           0
013540  000000                           0

013542  000004                   34$:    004                       ;DESELECT CHAR = "EOT"

013544  000045                   35$:    045                       ;DUMMY SELECT CHARACTER.
                                                                   ;IF "%" IS USED AS A SINGLE OR GROUP SELECT
                                                                   ;CHARACTER, REPLACE WITH ANY UNUSED SELECT
                                                                   ;CHARACTER CODE.

013546  000125                   40$:    125                       ;SINGLE SELECT CHAR TABLE
013550  000000                           0                         ;FIRST ZERO = END OF TABLE
013552  000000                           0
013554  000000                           0
013556  000000                           0
013560  000000                           0
013562  000000                           0
013564  000000                           0
013566  000000                           0
013570  000000                           0
013572  000000                           0
013574  000000                           0
```

```
                                      ;XXXXXXXXXXXXXXXX
                                      ;
                                      ;TEST32 -        AUTO ANSWER BACK OPTION
                                      ;
                                      ;XXXXXXXXXXXXXXXX

013570  000032                        TEST32: 32
[illegible]  013570                           TEST32
[illegible]  [illegible]                      PRTHDR                    ;PRINT TEST HEADER
013576  [illegible]  000005                   MOV     #5,R0             ;SEND ENQ CHAR
013602  104001                                ECHO
013604  004737  013634                        JSR     PC,10$            ;READ AND PRINT MESG
[illegible]  104002  013722                   TYPEM,  20$               ;TYPE INSTRUCTIONS
013614  004737  013634                        JSR     PC,10$            ;READ AND PRINT MESG
013620  104002  013747                        TYPEM,  30$               ;TYPE INSTRUCTIONS
[illegible]  004737  013634                   JSR     PC,10$            ;READ AND PRINT MESG
013630  104001                        2$:     CHAIN                     ;CHAIN TO NEXT TEST
013632  000755                                BR      TEST32            ;LOOP ON TEST

013634  012702  013773                10$:    MOV     #STORE,R2         ;SET TABLE ADR
013640  104013                                READ                      ;READ FIRST CHAR
013642  023727  001124  000177        5$:     CMP     TEMPCH,#177       ;CHAR = RUBOUT?
013650  001002                                BNE     3$                ;CONTINUE IF NOT RUBOUT
013652  000137  002450                        JMP     [illegible]       ;GO TO KYBD CONTROL
[illegible]  [illegible]  [illegible]  3$:    MOVB    TEMPCH,(R2)+      ;STORE CHAR
[illegible]  012703  [illegible]              MOV     #50.,R3           ;SET DELAY COUNT
013666  [illegible]  [illegible]      4$:     MOV     TIMER,R1
[illegible]  [illegible]              5$:     INRDY                     ;ANY INPUT?
[illegible]  [illegible]                      BR      6$                ;NO, WAIT FOR CHAR
013676  [illegible]                           BR      5$                ;YES, READ CHAR
[illegible]  [illegible]              6$:     [illegible]               ;DELAY WHILE WAITING FOR CHAR
[illegible]  [illegible]                      BNE     [illegible]
[illegible]  [illegible]                      [illegible]  R3
013706  [illegible]                           BNE     4$
[illegible]  105012                   7$:     CLRB    (R2)              ;SET NULL AS TERMINATOR IN TABLE
[illegible]  104002  013772                   TYPE,   STORE-1           ;TYPE MESG ON TERMINAL RECEIVED ON
[illegible]  [illegible]                      [illegible]               ;SEND CR-LF
013720  000207                                RTS     PC                ;RETURN TO TEST

013722  042504  051120  051505        20$:    .ASCII  DEPRESS HERE IS KEY  ACRLF
[illegible]  020123  [illegible]  [illegible]
[illegible]  044440  [illegible]  [illegible]
[illegible]  100131  [illegible]
013747  [illegible]  [illegible]  [illegible]  30$:  .ASCII  DEPRESS CONTROL-E  ACRLF
[illegible]  [illegible]  [illegible]  [illegible]
[illegible]  [illegible]  [illegible]  [illegible]
[illegible]  [illegible]
013772  [illegible]                           .ASCII  ACRLF

013773  000025                        STORE:  .BLKB   21.               ;20 CHAR + TERMINATOR BUFFER

                                              .EVEN
```

```
                                        ;XXXXXXXXXXXXXXXXX
                                        ;
                                        ;TEST33 -       FORM FEED OPTION
                                        ;
                                        ;XXXXXXXXXXXXXXXXX

        014020  000033                  TEST33: 33
        014022  014020                          TEST33
        014024  104012                          PRTHDR                  ;PRINT TEST HEADER
        014026  012705  014472                  MOV     #50$,R5         ;SET TABLE POINTER
        014032  012704  014456                  MOV     #60$,R4         ;SET TABLE POINTER
        014036  104002  014301                  TYPEM,  40$             ;PRINT INSTR
        014042  012701  000020                  MOV     #16.,R1         ;SET LF COUNT TO 16
        014046  104013                          READ                    ;WAIT FOR KYBD FLAG
        014050  012700  000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
        014054  104003                          DELAY
        014056  022737  000177  001124          CMP     #177,TEMPCH     ;CHECK FOR RUBOUT
        014064  001002                          BNE     13$             ;EXIT IF RUBOUT
        014066  000137  002450                  JMP     @#TTYIN         ;GO TO KYBD CONTROL
        014072  104014                  13$:    CR                      ;SEND CR
        014074  104010                  8$:     LF                      ;SEND LF
        014076  005301                          DEC     R1              ;DEC COUNT
        014100  001375                          BNE     8$              ;CONTINUE
        014102  012700  000014                  MOV     #14,R0          ;SET FF
        014106  104011                          PRINTC                  ;SEND IT
        014110  113701  014456                  MOVB    60$,R1          ;SET FILL COUNT
        014114  005000                  9$:     CLR     R0              ;SET NULL
        014116  104011                          PRINTC                  ;SEND FILLS
        014120  005301                          DEC     R1              ;DEC FILL COUNT
        014122  001374                          BNE     9$              ;CONTINUE
        014124  104002  014417                  TYPEM,  45$             ;TYPE MESSAGE
        014130  010537  014210          5$:     MOV     R5,2$           ;SET MESG
        014134  104013                          READ                    ;WAIT FOR KYBD FLAG
        014136  012700  000036                  MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
        014142  104003                          DELAY
        014144  022737  000177  001124          CMP     #177,TEMPCH     ;CHECK IF RUBOUT
        014152  001002                          BNE     15$             ;EXIT IF RUBOUT
        014154  000137  002450                  JMP     @#TTYIN         ;GO TO KYBD CONTROL
        014160  104014                  15$:    CR                      ;SEND CR
        014162  012700  000014                  MOV     #14,R0          ;SEND FF
        014166  104011                          PRINTC                  ;SEND IT
        014170  112401                          MOVB    (R4)+,R1        ;SET FILL COUNT
        014172  005000                  11$:    CLR     R0              ;SET NULL
        014174  104011                          PRINTC                  ;SEND FILLS
        014176  005301                          DEC     R1              ;CONTINUE
        014200  001374                          BNE     11$             ;FINISH NULLS
        014202  104002  014254          12$:    TYPEM,  10$             ;PRINT MESG
        014206  104002                          TYPEM
        014210  000000                  2$:     .WORD   0
        014212  104002  014262                  TYPEM,  20$
        014216  022525                          CMP     (R5)+,(R5)+     ;INC TABLE POINTER
        014220  010537  014226          3$:     MOV     R5,4$           ;SET MESG
        014224  104002                          TYPEM                   ;PRINT MESG
        014226  000000                  4$:     .WORD   0
```

G07

```
MAINDEC-11-DZLAD-D      MACY11 27(657)  12-SEP-75  13:30  PAGE 58                                                  SEQ 0084
DZLADD.P11        OPTION TESTS

2487  014230  104002  014271                        TYPEM,  30$
2488  014234  104002  014254                        TYPEM,  10$
2489  014240  005765  000004                        TST     4(R5)           ;DONE TEST?
2490  014244  001331                                BNE     5$              ;NO, CONTINUE
2491  014246  104006                                CRLF                    ;YES, SEND CR-LF
2492  014250  104001                                CHAIN                   ;SELECT TEST OR LOOP
2493  014252  000562                                BR      TEST33          ;LOOP ON TEST
2494
2495  014254  026455  026455  000055  10$:  .ASCIZ  -----
2496  014262  020042  043106  020057  20$:  .ASCIZ  " FF  ST
2497  014270     000
2498  014271     042  047040  054105  30$:  .ASCIZ  " NEXT
2499  014276  020124     000
2500  014301     104  050105  042522  40$:  .ASCII  DEPRESS FORMFEED RESET SWITCH  <CRLF>  AFTER EACH SWITCH SETTING  <CRLF>
2501  014306  051523  043040  051117
2502  014314  043115  042505  020104
2503  014322  042522  042523  020124
2504  014330  053523  052111  044103
2505  014336  040600  052106  051105
2506  014344  042440  041501  020110
2507  014352  053523  052111  044103
2508  014360  051440  052105  044524
2509  014366  043516     200
2510  014371     124  050131  020105        .ASCII  TYPE SPACE WHEN READY  <CRLF>
2511  014376  050123  041501  020105
2512  014404  044127  047105  051040
2513  014412  040505  054504     200
2514  014417     055  026455  020055  45$:  .ASCIZ  ---- SET  3 INCH FORMFEED ----
2515  014424  042523  020124  031440
2516  014432  044440  041516  020110
2517  014440  047506  046522  042506
2518  014446  042105  026440  026455
2519  014454  000055
2520  014456     002     005     010  50$:  .BYTE   2,5,8.,17.,20.,26.,32.,35.,50.,56.,65.
2521  014461     021     024     032
2522  014464     040     043     062
2523  014467     070     101
2524          014472                        .EVEN
2525
2526  014472  020040  000063          60$:  .ASCIZ  /  3/
2527  014476  027063  000065                .ASCIZ  /3.5/
2528  014502  020040  000064                .ASCIZ  /  4/
2529  014506  027065  000065                .ASCIZ  /5.5/
2530  014512  020040  000066                .ASCIZ  /  6/
2531  014516  020040  000067                .ASCIZ  /  7/
2532  014522  020040  000070                .ASCIZ  /  8/
2533  014526  027070  000065                .ASCIZ  /8.5/
2534  014532  030440  000061                .ASCIZ  / 11/
2535  014536  030440  000062                .ASCIZ  / 12/
2536  014542  030440  000064                .ASCIZ  / 14/
2537  014546  020040  000040                .ASCIZ  /   /
2538  014552  000000                        .WORD   0               ;END OF TABLE
```

```
                                        ;XXXXXXXXXXXXXXXX
                                        ;
                                        ;TEST34 -       HORIZONTAL TAB OPTION
                                        ;
                                        ;XXXXXXXXXXXXXXXX

014554  000034                          TEST34: 34
014556  014554                                  TEST34
014560  104012                                  PRTHDR                  ;PRINT TEST HEADER
014562  005004                                  CLR     R4              ;SET TABLE POINTER
014564  012737  014760  014756                  MOV     #16$,12$+2      ;RESET JUMP INSTR OR FIRST TIME THRU
014572  013703  001112                  2$:     MOV     WIDTH,R3        ;SET COLUMN COUNT
014576  012700  000033                          MOV     #33,R0          ;CLEAR OLD TABS
014602  104011                                  PRINTC
014604  012700  000062                          MOV     #62,R0
014610  104011                                  PRINTC
014612  104014                                  CR                      ;DO A CARRIAGE RETURN
014614  016401  015046                  3$:     MOV     20$(R4),R1      ;GET SPACE COUNT FOR TAB
014620  000405                                  BR      5$              ;SUBTRACT 1 FOR TAB SET
014622  012700  000040                  4$:     MOV     #40,R0          ;GET SPACE
014626  104011                                  PRINTC                  ;SEND IT
014630  005303                                  DEC     R3              ;DEC COLUMN COUNT
014632  001420                                  BEQ     6$              ;CR IF DONE LINE
014634  005301                          5$:     DEC     R1              ;DEC SPACE COUNT
014636  001371                                  BNE     4$              ;CONTINUE IF NOT DONE
014640  012700  000033                          MOV     #33,R0          ;SEND IT
014644  104011                                  PRINTC
014646  012700  000061                          MOV     #61,R0          ;SEND 1 - SET TAB
014652  104011                                  PRINTC
014654  012700  000010                          MOV     #10,R0          ;SET BACKSPACE
014660  104011                                  PRINTC
014662  012700  000117                          MOV     #'O,R0          ;PRINT O
014666  104011                                  PRINTC
014670  005303                                  DEC     R3              ;DEC COLUMN COUNT
014672  001350                                  BNE     3$              ;CONTINUE IF NOT DONE LINE
014674  104014                          6$:     CR                      ;SEND CR
014676  013703  001112                          MOV     WIDTH,R3        ;RESET COLUMN COUNT
014702  016401  015046                  17$:    MOV     20$(R4),R1      ;RESET COLUMN COUNT FOR TAB
014706  020127  000001                          CMP     R1,#1           ;ADD 1 IF FIRST LINE
014712  001001                                  BNE     11$
014714  005201                                  INC     R1
014716  016402  015072                  11$:    MOV     30$(R4),R2      ;SET FILL CHAR COUNT
014722  160103                                  SUB     R1,R3           ;SUBTRACT TAB FROM COLUMN COUNT
014724  002413                                  BLT     12$             ;BRANCH IF TOO MANY COLUMNS
014726  012700  000011                          MOV     #11,R0          ;SET TAB
014732  104011                                  PRINTC                  ;SEND IT
014734  005000                          14$:    CLR     R0              ;SET NULL CHAR - FILLS
014736  104011                                  PRINTC                  ;SEND FILL CHARS
014740  005302                                  DEC     R2              ;DEC FILL COUNT
014742  001374                                  BNE     14$             ;CONTINUE FILLS
014744  012700  000130                          MOV     #'X,R0          ;SET X CHAR
014750  104011                                  PRINTC                  ;SEND IT
014752  000761                                  BR      11$             ;CONTINUE
014754  000137  014760                  12$:    JMP     @#16$           ;SKIP FOLLOWING AFTER FIRST TIME THRU
```

```
014760  012737  015006  014756  16$:   MOV     #15$,12$+2
014766  104014                         CR                          ;SEND CR
014770  012700  000130                 MOV     #'X,R0              ;PRINT X
014774  104011                         PRINTC
014776  013703  001112                 MOV     WIDTH,R3            ;RESET COLUMNC COUNT
015002  005303                         DEC     R3                  ;SUBTRACT ONE FOR FIRST X CHAR
015004  000736                         BR      17$                 ;CONTINUE
015006  104006                  15$:   CRLF                        ;SEND CR-LF
015010  005724                         TST     (R4)+               ;INC TABLE POINTER
015012  016401  015046                 MOV     20$(R4),R1          ;GET COLUMN COUNT FOR TAB
015016  001403                         BEQ     13$                 ;EXIT IF DONE TABLE (0)
015020  020137  001112                 CMP     R1,WIDTH            ;CHECK IF TOO LARGE
015024  101662                         BLOS    2$                  ;CONTINUE TEST, OK
015026  012700  000033          13$:   MOV     #33,R0              ;CLEAR ALL TABS BEFORE EXITING
015032  104011                         PRINTC
015034  012700  000062                 MOV     #62,R0
015040  104011                         PRINTC
015042  104001                         CHAIN                       ;SELECT TEST OR LOOP ON TEST
015044  000643                         BR      TEST34              ;LOOP ON TEST

015046  000001  000002  000004  20$:   .WORD   1,2,4,8.,16.,32.,64.,128.,132.,0
015054  000010  000020  000040
015062  000100  000200  000204
015070  000000
015072  000001  000002  000003  30$:   .WORD   1,2,3,5,9.,18.,36.,71.,73.,0
[illegible]  000005  [illegible]  [illegible]
[illegible]  [illegible]  [illegible]  [illegible]
[illegible]  [illegible]  [illegible]  [illegible]
[illegible]  [illegible]
```

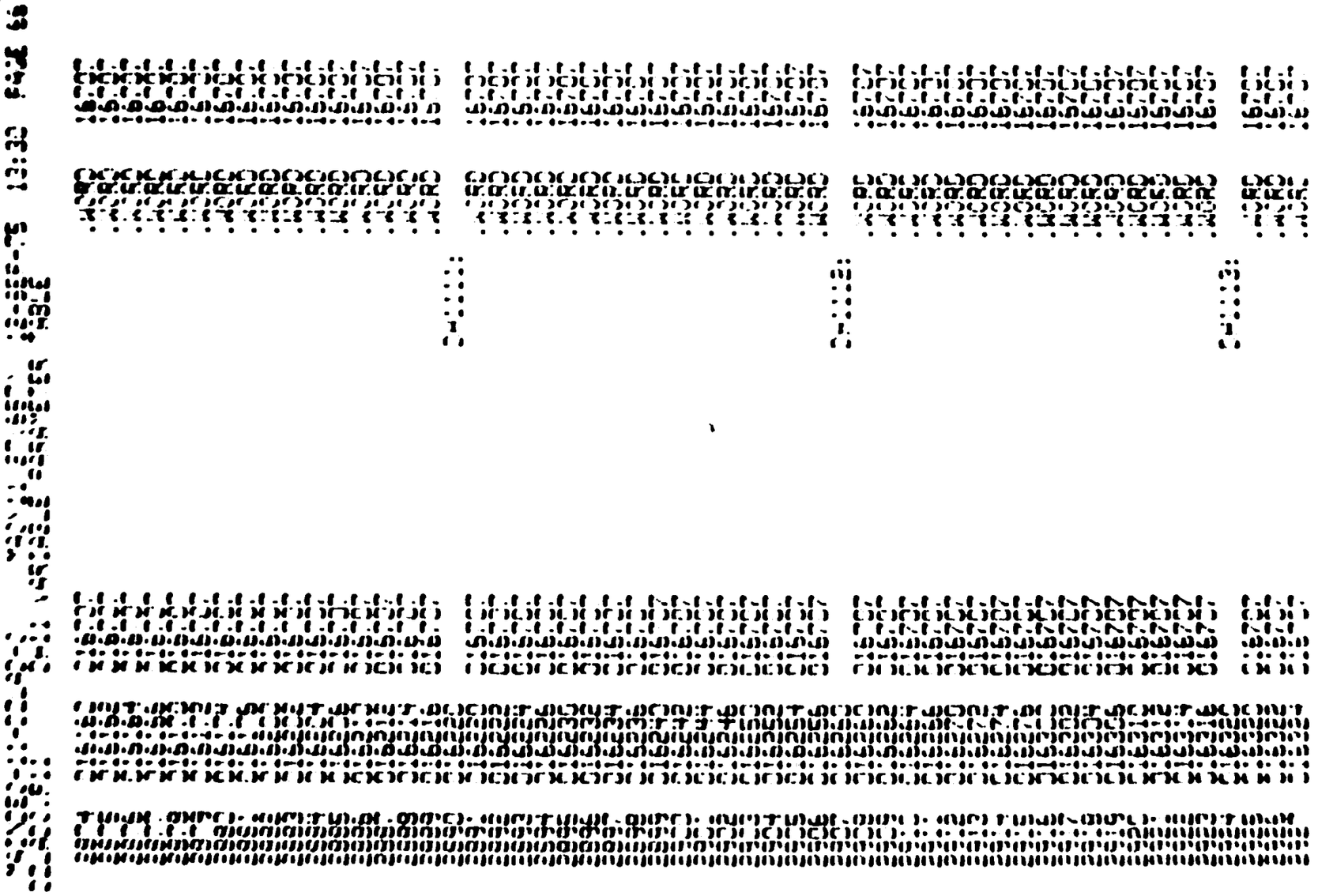
```
                                    ;XXXXXXXXXXXXXXX
                                    ;
                                    ;TEST35 -       VERTICAL TAB OPTION
                                    ;
                                    ;XXXXXXXXXXXXXXX

015116  000035                      TEST35: 35
015120  015116                              TEST35
015122  104016                              FRTHDR                  ;PRINT TEST HEADER
015124  104003                      1$:     TYPEM                   ;TYPE INSTR
015126  015437                              20$
015130  104013                              READ                    ;WAIT FOR KYBD FLAG
015132  012700  000036                      MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
015136  104003                              DELAY
015140  022737  000177  001124              CMP     #177,TEMPCH     ;CHECK CHAR
015146  001505                              BEQ     12$             ;EXIT TEST IF RUBOUT
015150  005004                              CLR     R4              ;SET LINE COUNT
015152  012700  000033                      MOV     #33,R0          ;CLEAR VERTICAL TABS
015156  104011                              PRINTC
015160  012700  000064                      MOV     #64,R0
015164  104011                              PRINTC
015166  104002                      2$:     TYPE$                   ;TYPE REF LINE
015170  015415                              15$
015172  005204                              INC     R4              ;INC LINE COUNT
015174  020427  000013                      CMP     R4,#13          ;CHECK IT
015200  003013                              BGT     35$             ;BRANCH IF DONE REF.
015202  010401                              MOV     R4,R1           ;GET LF COUNT
015204  104010                      3$:     LF                      ;SEND LF
015206  005301                              DEC     R1              ;DEC LF COUNT
015210  001375                              BNE     3$              ;CONTINUE
015212  012700  000033                      MOV     #33,R0          ;SET TAB FOR THIS LINE
015216  104011                              PRINTC
015220  012700  000063                      MOV     #63,R0
015224  104011                              PRINTC
015226  000757                              BR      2$              ;CONTINUE
015230  012700  000014              35$:    MOV     #14,R0          ;SEND FF
015234  104011                              PRINTC
015236  104002                              TYPEM                   ;TYPE MESG
015240  015531                              30$
015242  104013                              READ                    ;WAIT FOR KYBD FLAG
015244  012700  000036                      MOV     #30.,R0         ;DELAY FOR HALF DUPLEX
015250  104003                              DELAY
015252  022737  000177  001124              CMP     #177,TEMPCH     ;CHECK CHAR
015260  001440                              BEQ     12$             ;EXIT TEST IF RUBOUT
015262  005004                              CLR     R4              ;RESET LF COUNT
015264  104002                      4$:     TYPEM                   ;TYPE REF LINE
015266  015414                              10$
015270  005204                              INC     R4              ;INC LINE COUNT
015272  020427  000013                      CMP     R4,#13          ;CHECK IT
015276  003014                              BGT     9$              ;BRANCH IF DONE
015300  012700  000013                      MOV     #13,R0          ;SEND TAB
015304  104011                              PRINTC
015306  010401                              MOV     R4,R1           ;SET FILL COUNT
015310  162701  000020                      SUB     #16.,R1         ;SUBTRACT 16
```

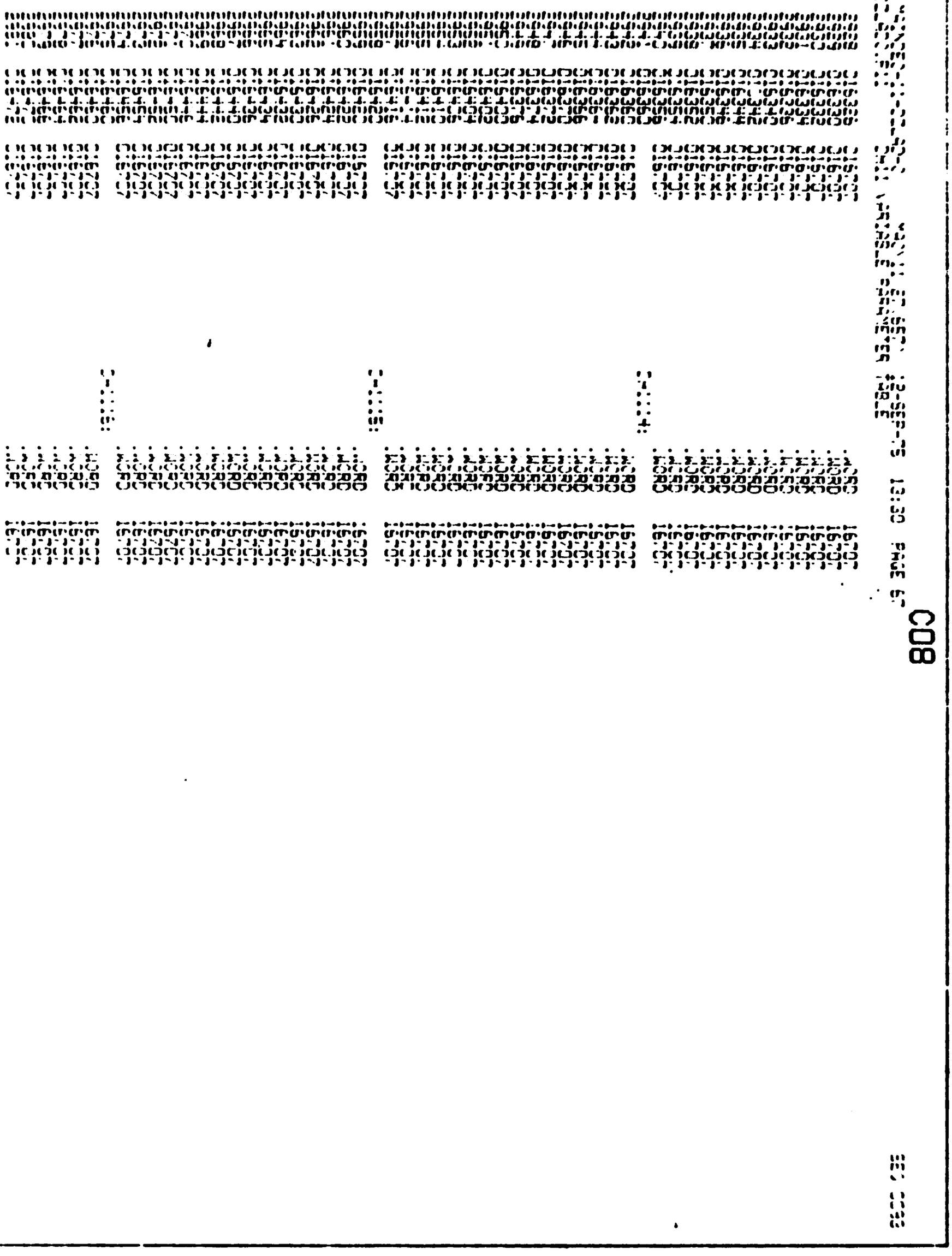
```
 2665  015314  003763                             BLE     4$              ;SKIP NULLS IF COUNT < 0
 2666  015316  005000                     5$:     CLR     R0              ;SET NULL CHAR
 2667  015320  104011                             PRINTC                  ;SEND NULLS
 2668  015322  005301                             DEC     R1              ;DEC COUNT
 2669  015324  001374                             BNE     5$              ;FINISH NULLS
 2670  015326  000756                             BR      4$              ;CONTINUE
 2671  015330  012700  000033             8$:     MOV     #33,R0          ;CLEAR VERTICAL TABS
 2672  015334  104011                             PRINTC
 2673  015336  012700  000064                     MOV     #64,R0
 2674  015342  104011                             PRINTC
 2675  015344  012700  000014                     MOV     #14,R0          ;SEND FF
 2676  015350  104011                             PRINTC
 2677  015352  104006                             CRLF                    ;SEND CR-LF
 2678  015354  104010                             LF                      ;SEND BLANK LINE
 2679  015356  104001                             CHAIN                   ;SELECT TEST OR LOOP ON TEST
 2680  015360  000656                             BR      TEST35          ;LOOP ON TEST
 2681  015362  012700  000033             12$:    MOV     #33,R0          ;CLEAR ALL TABS BEFORE EXITING TEST
 2682  015366  104011                             PRINTC
 2683  015370  012700  000064                     MOV     #64,R0
 2684  015374  104011                             PRINTC
 2685  015376  012700  000014                     MOV     #14,R0          ;SEND FF
 2686  015402  104011                             PRINTC
 2687  015404  104006                             CRLF
 2688  015406  104010                             LF
 2689  015410  000137  002450                     JMP     TTY1H           ;GO KYBD CONTROL
 2690
 2691  015414     040                     10$:    .ASCII  <40>
 2692  015415     055  026455  026455     15$:    .ASCIZ  /--------<<<<<<</<15>
 2693  015422  026455  036055  036074
 2694  015430  036074  036074  006474
 2695  015436     000
 2696  015437     123  052105  030440     20$:    .ASCII  /SET 14 INCH FORM FEED/<ACRLF>
 2697  015444  020064  047111  044103
 2698  015452  043040  051117  020115
 2699  015460  042506  042105     200
 2700  015465     104  050105  042522             .ASCIZ  /DEPRESS TOP OF FORM RESET SWITCH/<ACRLF><12><12>
 2701  015472  051523  052040  050117
 2702  015500  047440  020106  047506
 2703  015506  046522  051040  051505
 2704  015514  052105  051440  044527
 2705  015522  041524  100110  005012
 2706  015530     000
 2707  015531     001  000401  042522     30$:    .ASCIZ  <1><1><1>/REMOVE /<57>/ RESET REF
 2708  015536  047515  042526  027440
 2709  015544  051040  051505  052105
 2710  015552  051040  043105     000
 2711          015560                             .EVEN
```

```
                                        .SBTTL  DH11 VARIABLE PARAMETER TABLE


                                ;**********
                                ;
                                ;DH11 PROGRAMMABLE PRAMETER TABLE
                                ;
                                ;THIS TABLE IS PROVIDED TO ALLOW THE DEGREE OF FREEDOM AVAILABLE
                                ;IN THE DH11 PROGRAMMABLE MULTIPLEXER. THERE ARE 256 ENTRIES, ONE
                                ;FOR EACH OF THE POSSIBLE 16 LINES ON EACH OF THE POSSIBLE 16
                                ;DH11'S.  EACH OF THE 256 LINES ARE INITIALIZED AS FOLLOWS:(=16707)
                                ;       CHARACTER LENGTH        = 8 BITS
                                ;       NO. OF STOP BITS        = 2
                                ;       PARITY GEN. AND DET.    NONE
                                ;       OPERATING MODE          FULL DUPLEX
                                ;       TRANSMITTER SPEED       = 300 BAUD
                                ;       RECEIVER SPEED  = 300 BAUD
                                ;
                                ;IF ANY LINE SHOULD DIFFER, THE APPROPRIATE ENTRY FOR THE LINE
                                ;SHOULD BE CHANGED BEFORE RUNNING THE DIAGNOSTIC.  REFER TO THE LINE
                                ;PARAMETER REGISTER IN THE DH11 PROGRAMMING MANUAL FOR INSTRUCTIONS.
                                ;
                                ;**********

                                DH1100:
2737  015560                            .WORD   16707
2738  015560  016707                     .WORD   16707
2739  015562  016707                     .WORD   16707
2740  015564  016707                     .WORD   16707
2741  015566  016707                     .WORD   16707
2742  015570  016707                     .WORD   16707
2743  015572  016707                     .WORD   16707
2744  015574  016707                     .WORD   16707
2745  015576  016707                     .WORD   16707
2746  015600  016707                     .WORD   16707
2747  015602  016707                     .WORD   16707
2748  015604  016707                     .WORD   16707
2749  015606  016707                     .WORD   16707
2750  015610  016707                     .WORD   16707
2751  015612  016707                     .WORD   16707
2752  015614  016707                     .WORD   16707
2753  015616  016707                     .WORD   16707
2754  015620                          DH1101:
2755  015620  016707                     .WORD   16707
2756  015622  016707                     .WORD   16707
2757  015624  016707                     .WORD   16707
2758  015626  016707                     .WORD   16707
2759  015630  016707                     .WORD   16707
2760  015632  016707                     .WORD   16707
2761  015634  016707                     .WORD   16707
2762  015636  016707                     .WORD   16707
2763  015640  016707                     .WORD   16707
2764  015642  016707                     .WORD   16707
2765  015644  016707                     .WORD   16707
```

```
 2766  015646  016707                        .WORD   16707
 2767  015650  016707                        .WORD   16707
 2768  015652  016707                        .WORD   16707
 2769  015654  016707                        .WORD   16707
 2770  015656  016707                        .WORD   16707
 2771  015660                        DH1102:
 2772  015660  016707                        .WORD   16707
 2773  015662  016707                        .WORD   16707
 2774  015664  016707                        .WORD   16707
 2775  015666  016707                        .WORD   16707
 2776  015670  016707                        .WORD   16707
 2777  015672  016707                        .WORD   16707
 2778  015674  016707                        .WORD   16707
 2779  015676  016707                        .WORD   16707
 2780  015700  016707                        .WORD   16707
 2781  015702  016707                        .WORD   16707
 2782  015704  016707                        .WORD   16707
 2783  015706  016707                        .WORD   16707
 2784  015710  016707                        .WORD   16707
 2785  015712  016707                        .WORD   16707
 2786  015714  016707                        .WORD   16707
 2787  015716  016707                        .WORD   16707
 2788  015720                        DH1103:
 2789  015720  016707                        .WORD   16707
 2790  015722  016707                        .WORD   16707
 2791  015724  016707                        .WORD   16707
 2792  015726  016707                        .WORD   16707
 2793  015730  016707                        .WORD   16707
 2794  015732  016707                        .WORD   16707
 2795  015734  016707                        .WORD   16707
 2796  015736  016707                        .WORD   16707
 2797  015740  016707                        .WORD   16707
 2798  015742  016707                        .WORD   16707
 2799  015744  016707                        .WORD   16707
 2800  015746  016707                        .WORD   16707
 2801  015750  016707                        .WORD   16707
 2802  015752  016707                        .WORD   16707
 2803  015754  016707                        .WORD   16707
 2804  015756  016707                        .WORD   16707
 2805  015760                        DH1104:
 2806  015760  016707                        .WORD   16707
 2807  015762  016707                        .WORD   16707
 2808  015764  016707                        .WORD   16707
 2809  015766  016707                        .WORD   16707
 2810  015770  016707                        .WORD   16707
 2811  015772  016707                        .WORD   16707
 2812  015774  016707                        .WORD   16707
 2813  015776  016707                        .WORD   16707
 2814  016000  016707                        .WORD   16707
 2815  016002  016707                        .WORD   16707
 2816  016004  016707                        .WORD   16707
 2817  016006  016707                        .WORD   16707
 2818  016010  016707                        .WORD   16707
 2819  016012  016707                        .WORD   16707
```

```
 2820  016014  016707                        .WORD   16707
 2821  016016  016707                        .WORD   16707
 2822  016020                        DH1105:
 2823  016020  016707                        .WORD   16707
 2824  016022  016707                        .WORD   16707
 2825  016024  016707                        .WORD   16707
 2826  016026  016707                        .WORD   16707
 2827  016030  016707                        .WORD   16707
 2828  016032  016707                        .WORD   16707
 2829  016034  016707                        .WORD   16707
 2830  016036  016707                        .WORD   16707
 2831  016040  016707                        .WORD   16707
 2832  016042  016707                        .WORD   16707
 2833  016044  016707                        .WORD   16707
 2834  016046  016707                        .WORD   16707
 2835  016050  016707                        .WORD   16707
 2836  016052  016707                        .WORD   16707
 2837  016054  016707                        .WORD   16707
 2838  016056  016707                        .WORD   16707
 2839  016060                        DH1106:
 2840  016060  016707                        .WORD   16707
 2841  016062  016707                        .WORD   16707
 2842  016064  016707                        .WORD   16707
 2843  016066  016707                        .WORD   16707
 2844  016070  016707                        .WORD   16707
 2845  016072  016707                        .WORD   16707
 2846  016074  016707                        .WORD   16707
 2847  016076  016707                        .WORD   16707
 2848  016100  016707                        .WORD   16707
 2849  016102  016707                        .WORD   16707
 2850  016104  016707                        .WORD   16707
 2851  016106  016707                        .WORD   16707
 2852  016110  016707                        .WORD   16707
 2853  016112  016707                        .WORD   16707
 2854  016114  016707                        .WORD   16707
 2855  016116  016707                        .WORD   16707
 2856  016120                        DH1107:
 2857  016120  016707                        .WORD   16707
 2858  016122  016707                        .WORD   16707
 2859  016124  016707                        .WORD   16707
 2860  016126  016707                        .WORD   16707
 2861  016130  016707                        .WORD   16707
 2862  016132  016707                        .WORD   16707
 2863  016134  016707                        .WORD   16707
 2864  016136  016707                        .WORD   16707
 2865  016140  016707                        .WORD   16707
 2866  016142  016707                        .WORD   16707
 2867  016144  016707                        .WORD   16707
 2868  016146  016707                        .WORD   16707
 2869  016150  016707                        .WORD   16707
 2870  016152  016707                        .WORD   16707
 2871  016154  016707                        .WORD   16707
 2872  016156  016707                        .WORD   16707
 2873  016160                        DH1110:
```



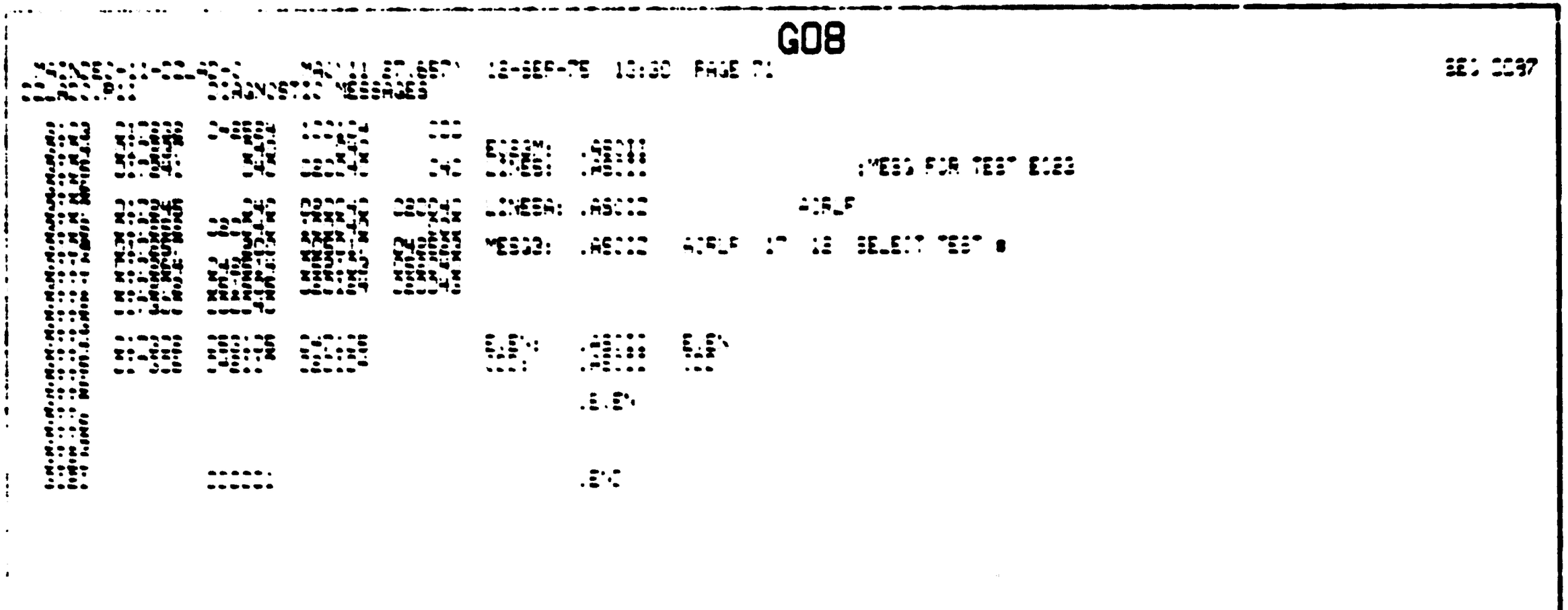


```
        .SBTTL  EXISTING LINE TABLE

;***********
;
;EXISTING LINE TABLE
;
;THIS 16 WORD TABLE, ONE ENTRY FOR EACH OF THE POSSIBLE 16 DH11'S
;OF DH11'S INDICATES WHICH OF THE LINES HAVE A TERMINAL CONNECTED
;THIS TABLE SHOULD BE INITIALIZED BEFORE RUNNING THE DIAGNOSTIC. BIT 0
;IS LINE #0 WHILE BIT 15 IS LINE #15.  A 1 INDICATES THAT A TERMINAL IS
;NOT CONNECTED WHILE A 0 INDICATES THAT THE TERMINAL DOES EXIST ON THE
;LINE.
;
;EX.  IF THERE ARE TERMINALS ON LINE #0,#5,#10 AND#13  ONLY ON THE
;FIRST DH11 AND NO OTHER DH11 EXIST, SET THE FIRST ENTRY IN THIS
;TABLE = [illegible] AND ALL OTHER WORDS = [illegible].  THE DIAGNOSTIC IS
;INITIALIZED SO THAT NO TERMINALS EXIST.
;
;***********

ELTAB:  .WORD   [illegible]     ;FIRST DH11
        [illegible]
```

[illegible]

```
        .SBTTL  DIAGNOSTIC MESSAGES

STARTM: .ASCIZ  <CRLF>"LT" MAINDEC-11-DZLAC-C <CRLF>
        .ASCII  LA36 TERMINAL DIAGNOSTIC <CRLF>
        .ASCIZ  DH11 & DJ11 INTERFACES <CRLF> 12
ENDPAS: .ASCIZ  <CRLF> 12 END OF PASS
PASMES: .ASCIZ  0000 <CRLF> 12
DH11S:  .ASCIZ  00 DH11'S UNDER TEST <CRLF> 12
DJ11S:  .ASCIZ  00 DJ11'S UNDER TEST <CRLF> 12
HDRMSG: .ASCIZ  <CRLF> LT 12 TEST 8
HCRD:   .ASCIZ  ... COLUMNS <CRLF> 12
E0ESMA: .ASCII  TYPE ANY PRINTABLE CHARACTER
        .ASCIZ  AND LISTEN FOR BELL................
E0ESMB: .ASCIZ  <CRLF> NOT ENOUGH COLUMNS <CRLF>
E0END:  .ASCIZ  <CRLF> EOM TEST TERMINATED <CRLF>
```

G08



[illegible] =	[illegible]	ACTIV	001222	AUTEMP	004274	BAR	001150
[illegible]	[illegible]	BIT0 =	000001	BIT1 =	000002	BIT10 =	002000
[illegible] =	[illegible]	BIT12 =	010000	BIT13 =	020000	BIT14 =	040000
[illegible] =	[illegible]	BIT2 =	000004	BIT3 =	000010	BIT4 =	000020
[illegible] =	[illegible]	BIT6 =	000100	BIT7 =	000200	BIT8 =	000400
[illegible] =	[illegible]	BOTASC=	104015	BUFR	012064	BYCR	001146
[illegible]	001144	CHAIN =	104001	CHAINN	001746	CHAINY	001772
[illegible]	[illegible]	CLEAN =	104017	CNTDH	001154	CNTLSW	001104
[illegible]	[illegible]	CR =	104014	CRLF =	104006	CSR	001236
[illegible]	[illegible]	DELAY =	104003	DHADR	001134	DHCNT	001230
[illegible]	[illegible]	DH1100	015560	DH1101	015620	DH1102	015660
[illegible]	[illegible]	DH1104	015760	DH1105	016020	DH1106	016060
[illegible]	[illegible]	DH1110	016160	DH1111	016220	DH1112	016260
[illegible]	[illegible]	DH1114	016360	DH1115	016420	DH1116	016460
[illegible]	[illegible]	DIGIT	004270	DISPRE	000174	DICNT	001226
[illegible]	[illegible]	[illegible]	004056	ECHO =	104021	ECHODJ	003462
[illegible]	[illegible]	[illegible]TAB	016560	EMTINT	003256	EMTTAB	003332
[illegible]	[illegible]	ENDATD	005254	ENDITR	005246	ENDPAS	016727
[illegible]	[illegible]	ENDH	001446	E020	010756	E021	011020
[illegible]	[illegible]	E021B	011064	E022	011074	E022A	011100
[illegible]	[illegible]	E023	011360	E023M	017237	E024	011702
[illegible]	[illegible]	E024R	011730	E025	012466	E025MA	017063
[illegible]	[illegible]	EVEN	017302	FORWD =	104016	HDRMSG	017333
[illegible]	[illegible]	HERE	010600	INRDY =	104022	[illegible]OSW	001224
[illegible] =	[illegible]	LFCNT	001132	LINENO	001156	LINE2	006774
[illegible]	[illegible]	LINES	017241	LINESA	017245	LOGICA	010570
[illegible]	[illegible]	MATHER	000001	MASK	001160	MESG3	017251
[illegible]	[illegible]	MGES	011676	MONIC	011154	MOVNUM	011620
[illegible]	[illegible]	NRCRA	001140	NXTST	001110	[illegible]	017306
[illegible] =	[illegible]	OUTPUT	012002	PARITY	001126	PASCNT	[illegible]
[illegible]	016746	PC =%	000007	PCHAR	001130	PFAIL	[illegible]
[illegible] =	[illegible]	POST	001122	PRGTAB	003156	PRINTC=	104011
[illegible]	[illegible]	PRTHDR=	104012	PT0	006410	PT1	006464
[illegible]	[illegible]	PT11	010472	PT12	010524	PT12A	010532
[illegible]	[illegible]	PT17B	010604	PT17D	010626	PT2	005606
[illegible]	007236	PT4	007356	PT5	007534	PTSAL	007700
[illegible]	[illegible]	PT7	010122	READ =	104013	REF	007466
[illegible]	[illegible]	RESTRT	004136	RTNNO	001106	R0 =%	000000
[illegible] =%	[illegible]	R2 =%	000002	R3 =%	000003	R4 =%	000004
[illegible] =%	[illegible]	SAVR6	004134	SCANDH	002604	SCANDJ	003016
[illegible]	[illegible]	SCRLF =	104007	SCR1	001232	SCR2	001234
[illegible]	[illegible]	SETERM	002560	SP =%	000006	SPBOT	001100
[illegible]	[illegible]	SPCNT	001116	SPSP	006556	SP2	006552
[illegible]	[illegible]	SSR	001152	START	001256	STARTM	016620
[illegible]ARTX	[illegible]	START1	001246	STORE	013773	STRLN	011542
[illegible]REG	000176	TBUF	001242	TCR	001240	TEMPCH	001124
[illegible]	004272	TERM	012054	TESTC =	104020	TEST30	012570
[illegible]	[illegible]	TEST32	013570	TEST33	014020	TEST34	014554
[illegible]	015116	TIMER	001102	TTYCTL=	104004	TTYJ	002022
[illegible]	[illegible]	TTYCTL=	104005	TTY1	002052	TTY1A	002054
[illegible]	[illegible]	TTY10	002410	TTY1H	002450	TTY1L	002516
[illegible]	003776	TYPE =	104000	TYPEM =	104002	TYPM	004026
[illegible]	[illegible]	$[illegible]TH	001112	$STASC	004202	$CLEAN	001732
[illegible]	[illegible]	$CRLF	[illegible]	$ECHO	[illegible]	$[illegible]	[illegible]

[illegible] SYMBOL TABLE

[illegible]

ERRORS DETECTED: 0

[illegible]

Spooler runtime 11 Seconds, 348 KCS, 332 disk reads, 3 disk writes, 99 pages